ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

~~SECRET~~

EXEMPTED FROM AUTOMATIC DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE: 25X(1)
DATE 04-08-2009
FBI INFORMATION ONLY

UNITED STATES GOVERNMENT
OFFICE MEMORANDUM

TO: SAC (105-new)

DATE: June 18, 1964

FROM: Supervisor [redacted]

SUBJECT: LUIS WALTER ALVAREZ, aka
L. V. Alvarez

IS - R

Memo to 116 File 7/10

b6
b7C

UNDER NO CIRCUMSTANCES SHOULD INFORMATION IN THIS MEMORANDUM, OR INFORMATION RESULTING FROM INVESTIGATION BASED ON IT, BE DISSEMINATED OR INCLUDED IN ANY COMMUNICATION SUITABLE FOR DISSEMINATION. NO INTERVIEW OF CAPTIONED INDIVIDUAL OR OTHER PERSONS SHOULD BE CONDUCTED ON THE BASIS OF INFORMATION DEVELOPED IN THIS MATTER BEFORE REVIEW OF FILE [redacted]

(S) By letter dated 12/10/63 the New York Office advised that the name of the captioned individual was included [redacted] (See [redacted]

b1

Captioned person should be fully identified through established sources only. Background information should include: name; date and place of birth; residence; marital status; wife's name; Division file number; Bufile number; employment; specific occupation or assignment; category (see [redacted] automobile; physical description; photograph available.

(S) b1

Following review of office and Bureau indices, recommendation is to be submitted to Bureau concerning interview of captioned person in accordance with instructions in [redacted]

(S) b1

(S) Biographic information concerning captioned individual other than his name, if such information is available, appears in [redacted]

b1

The handling of information concerning this Subject should be coordinated with SA [redacted]

b1
b6
b7C

(S) Item C-9-64 of the [redacted] List pefers to "L. V. ALVAREZ" among persons at the Radiation Laboratory of the University of California. LUIS WALTER ALVAREZ is employed at Lawrence Radiation Laboratory. Subject of SF file 116-523; Bufile 116-7905.

KGT:lg
(3)
2- 105-new
(S) 1 [redacted]

~~SECRET~~

[redacted]

SEARCHED ..... INDEXED
SERIALIZED ..... FILED
JUN 18 1964
SAN FRANCISCO

[redacted]

b1
b6
b7C

105-16261-1

Indices Search Slip
FD-160 (Rev. 10-1-59)

2 1

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 04-08-2009 BY 60322UCLRP/PJ/EHL

TO: CHIEF CLERK

Date 7-15-64

Subject LUIS WALTER ALVAREZ

Aliases Employed at Lawrence Radiation Lab

Address	Birth Date	Birthplace	Race	Sex
	6/13/11	SF		☐ Male ☐ Female

☐ Exact Spelling ☐ Main Criminal Case Files Only ☐ Restrict to Locality of
☒ All References ☐ Criminal References Only
☐ Main Subversive Case Files Only ☐ Main Subversive (If no Main, list all Subversive References)
☐ Subversive References Only ☐ Main Criminal (If no Main, list all Criminal References)

File & Serial Number	Remarks	File & Serial Number	Remarks
116-~~7705~~*	523*	L.W. Alvarez	Visitor attend High Energy Physics Conf July 1959 Kiev USSR
105-16261*		I 105-0-3311	(6/59)
List Added Ref		I 105-2563-33597	See (12/63)
I 116-523*			
I 100-25567*		Louis Alvarez	
I 65-3986*		I 100-16980-1236	Old date
I 77-7441*		-1323	
I 105-40~~88-3~~	Bu Airtel 5/11/56 authorizing interview of Alvarez under alerting of key scientific progra		
I 100-16780	Interviewed on 5/17/56 *	Luis Alvarez	
I	-1672	65-4999-18	6*
	-3281*	I 100-0-91839	(6/59) Not pert. per T.
I 100-0-34803	*	I 100-3132-727	1* (5/54)
I 100-25564-3	*	100-17879-	(3664) 23*
I -29843-4	*	Close personal friend of	Pres. of Ford
I -28017	-189 p.2*		Foundation, NYC.
I 117-12-4	10.4 *		
I 65-4154	-19,* 21 p.5, 22 (3/50)	* Previously Reviewed	

Requested by

Squad 8 Extension 324 File No. 105-16261

Searched by jh 7/17/64 (date)

Consolidated by (date)

Reviewed by K 7/27/64 (date)

File Review Symbols
I - Identical
NI - Not identical
? - Not identifiable
U - Unavailable reference

b6
b7C

b6
b7C

5122

TO: CHIEF CLERK

Date

Subject

Aliases

Address	Birth Date	Birthplace	Race	Sex ☐ Male ☐ Female

☐ Exact Spelling ☐ Main Criminal Case Files Only ☐ Restrict to Locality of
☐ All References ☐ Criminal References Only
☐ Main Subversive Case Files Only ☐ Main Subversive (If no Main, list all Subversive References)
☐ Subversive References Only ☐ Main Criminal (If no Main, list all Criminal References)

File & Serial Number	Remarks	File & Serial Number	Remarks
105-662-3	p. 3 * (5/50)		
105-662-7	* (6/50)	135-30	Sec R. Requesting B. authorization for interviews
66-1920-	29 p. * 1 (1/51) changed		
CWR 66-2197-	28 * (6/51)		
65-4149	-39; 38 p. 3 *		
~~66-1920-~~	~~-39 p. 1 (1/51)~~		dupe
100-3132	-735 AP. 10 * (5/54)		
	-685 A * (5/54)		
	-863 p2 * (6/54)		
	-780 p. 2 * (6/54)		
	-871 p. 2.5 * (6/54)		
Clears			
NI 65-2585 C-419	*		
100-24095-356	1 2c *		
NI 100-25972-365	1 1a	Sec R. (1945)	
100-28017-355	1 5a *		
		* Previously Reviewed	

Requested by	Squad	Extension	File No.

Searched by JL 7/17/64 (date)

Consolidated by _____ (date)

Reviewed by [signature] 7/27/64 (date)

File Review Symbols

I - Identical
NI - Not identical
? - Not identifiable
U - Unavailable reference

~~SECRET~~

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
WHERE SHOWN OTHERWISE

DIRECTOR, FBI 8/27/64

SAC, SAN FRANCISCO (105-16261) P

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-08-2009

LUIS WALTER ALVAREZ, aka.
Luis Schmoll Alvarez,
L.V. Alvarez
(S) IS - R; [redacted] b1

OO: SAN FRANCISCO

(S) By letter dated 12/10/63 [redacted]

[redacted] b1

The name of "L.V. ALVAREZ" appeared as Item C-9-64 on this list among the names of scientists at the Radiation Laboratory of the University of California.

The current directory of the Lawrence Radiation Laboratory, Berkeley, California, lists a LUIS W. ALVAREZ as a Physicist there. He is also a Professor of Physics at the University of California at Berkeley.

On 7/22/64 the AEC security file for LUIS WALTER ALVAREZ, aka., Luis Schmoll Alvarez, at the San Francisco Operations Office, AEC, Berkeley, was examined by SA [redacted] b6 b7C [redacted] This file disclosed that ALVAREZ has held an AEC clearance since 6/18/47. Prior investigation of ALVAREZ produced allegations to the effect that he talked too much and revealed information which might possibly be classified. Investigation failed to substantiate any of these allegations. ALVAREZ has traveled throughout the world in connection with his scientific activities and visited the USSR in 1956 and again in 1959.

(S)
3 - Bureau (RM)
(1 [redacted] b1
(S) 2 - New [redacted]
(1
3 - San Francisco
(S) (1 [redacted]
KGT/efb
(8)

Post P

[redacted] b6 b7C

~~SECRET~~

105-16261-2

SF 105-16261
KGT/efb

(S) [redacted] b1

He has been cooperative with this office and has expressed the desire to be of assistance to the Bureau, however he can.

The following items are being listed in response to the request of the New York Office in re NY let:

Date of Birth:	6/13/11
Place of Birth:	San Francisco, California
Residence:	4 Northampton Avenue, Berkeley, California
Marital Status:	Married
[redacted]	[redacted] b6 b7C
Division File #:	105-16261, 116-523, 77-7441, 65-3986, 100-25567
Bu File #:	116-7905, 100-344677
Employment:	Lawrence Radiation Laboratory, Berkeley, California
Specific Occupation or assignment:	Head of Physics Research Group 3
Category:	
Automobile:	1962 Ford two-door sedan, Calif. Lic. BSL 444; 1955 Nash stationwagon, Calif. Lic. BSL 445
Phys Desc:	white; 6'2½"; 165 pounds; blue eyes; blond hair
Photo Avail:	Yes, Lawrence Radiation Laboratory, Badge Office.

Request of the Bureau:

(S) The Bureau is requested to review its files concerning ALVAREZ and furnish San Francisco any information which would be pertinent to the [redacted] investigation which is not already in possession of this office. b1

~~SECRET~~

SF 105-16261
KGT/efb

LEADS:

(S) Following receipt of requested information from the Bureau, San Francisco will submit a recommendation concerning interview of ALVAREZ [redacted] b1

~~SECRET~~

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

5010-106

~~SECRET~~

UNITED STATES GOVERNMENT

Memorandum

TO : SAC, San Francisco (105-16261) DATE: 9-18-64

FROM : Director, FBI (100-344677)

SUBJECT: (S) LUIS WALTER ALVAREZ
IS - R

[redacted] b1

ReSFlet 8-27-64.

Bufiles indicate SF is in possession of pertinent information concerning subject.

1 - New York

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AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-08-2009

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WHERE SHOWN OTHERWISE

~~SECRET~~

105-16261-3

SEARCHED ___ INDEXED ___
SERIALIZED
SEP 21 10 03 AM '64
FBI - SAN FRANCISCO

[redacted] b6 b7C

~~SECRET~~

DIRECTOR, FBI (100-344677) 10/23/64

SAC, SAN FRANCISCO (105-16261) P

EXEMPTED FROM AUTOMATIC DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1) b1
DATE 04-08-2009

(S) LUIS WALTER ALVAREZ
ESPIONAGE - R; [redacted]

OO: SF

Remylet, 8/27/64 and Bulet 9/18/64.

As noted in re SFlet, ALVAREZ was last interviewed in 1956 with specific reference to the Bureau's interest and
(S) responsibilities in the espionage field. In view of the amount of time that has elapsed since then and in view of ALVAREZ' past cooperative attitude it is believed that he should be interviewed under [redacted] Bureau authorization for this b1
interview is requested herewith.

The New York Office is requested to furnish its comments and observations concerning the desirability of this interview.

LEADS:

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
WHERE SHOWN OTHERWISE

SAN FRANCISCO OFFICE

AT BERKELEY, CALIFORNIA

Will interview Subject if authorized by the Bureau.

(S)

3 - Bureau (RM)
(1 - [redacted]
(S) 2 - New York (REI)
(1 [redacted] b1
3 - San Francisco
(S) (1 - [redacted]
KGT/efb
(8)

Post P

~~SECRET~~

[redacted] b6 b7C

105 16261-4

~~SECRET~~

OCT 30 1964

DIRECTOR, FBI (100-344677)

(S) SAC, NEW YORK [redacted] b1

LUIS ULMER ALVAREZ aka
ESP - R

Re San Francisco letter to Bureau, 10/23/64, captioned as above.

(S) The NYO has no information which would preclude an interview of ALVAREZ in line with the regulations of the [redacted] program. b1

The above is for information.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
WHERE SHOWN OTHERWISE

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-06-2009

(S)

2-Bureau (RM)
(1 [redacted]
(S) 2-San Francisco (105-16201)(RM)
(1- [redacted] b1
1-New York [redacted]
(S) 1-New York [redacted]

EJA:tmm
(7)

105-16201-5
SEARCHED INDEXED
SERIALIZED FILED
NOV 4 1964
FBI — SAN FRANCISCO
[redacted]

b6
b7C

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~~SECRET~~

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

5010-106

UNITED STATES GOVERNMENT

Memorandum

TO : SAC, San Francisco (105-16261)

DATE: 11-3-64

FROM : Director, FBI (100-344677)

SUBJECT: LUIS WALTER ALVAREZ
ESPIONAGE - R

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-08-2009

(S) [redacted] b1

ReSFlet 10-23-64.

(S) Authority granted to interview subject in line with the objectives [redacted] to advise him of the Bureau's jurisdiction and to solicit his cooperation in advising the Bureau of any future contacts he may have with Soviets. Interview off campus. b1

1 - New York

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
WHERE SHOWN OTHERWISE

105-16261-6

SEARCHED ___ INDEXED ___
SERIALIZED ___ FILED ___
Nov 4 10 34 AM '64
FBI - SAN FRANCISCO

[redacted]

b6
b7C

~~SECRET~~

1-4 (Rev. 9-30-63)

UNITED STATES DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20537

11-6-64

J. Edgar Hoover
Director.

The following FBI record, NUMBER **none assigned**, is furnished FOR OFFICIAL USE ONLY.

CONTRIBUTOR OF FINGERPRINTS	NAME AND NUMBER	ARRESTED OR RECEIVED	CHARGE	DISPOSITION
Navy Department Pass Section Quonset Pt. Quonset Pt. RI	Louis W. Alvarez	appl FP 3-12-42		
USSS Boston Mass	Luis Walter Alvarez	appl FP 4-25-42		

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 04-09-2009 BY 60322 UCLRP/PJ/EHL

SEARCHED ___ INDEXED ___
SERIALIZED ___
NOV 18 4 49 PM '64

b6
b7C

Since neither fingerprints nor an identifying number which is indexed in our files accompanied your request, FBI cannot guarantee in any manner that this material concerns the individual in whom you are interested.

Information shown on this Identification Record represents data furnished FBI by fingerprint contributors. Where final disposition is not shown or further explanation of charge is desired, communicate with agency contributing those fingerprints.
Notations indicated by * are NOT based on fingerprints in FBI files but are listed only as investigative leads as being possibly identical with subject of this record.

105-16261-9

U.S. GOVERNMENT PRINTING OFFICE : 1963 O—708-216

1-4c (7-20-64)

UNITED STATES DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C., 20537

11-6-64

J. Edgar Hoover
Director.

2

The following FBI record, NUMBER **none assigned**, is furnished FOR OFFICIAL USE ONLY.

All descriptive factors (if any) furnished by you match those in our identification file unless herein quoted.

DESCRIPTION AND RELATED DATA:

Race:

Sex:

Height:

Weight:

Hair:

Eyes:

Date and Place of Birth:

Scars & Marks: **scar, abdomen**

Address: **in 1947 - 360 Vassar Ave, Berkeley, Calif**

Occupation: **unknown**

**Company: in 1947 - Associated Universities, Inc.
Patchogue, Long Island, New York**

Fingerprint Classification:
12 M 13 U OII
I 30 U OOI 16

Since neither fingerprints nor an identifying number which is indexed in our files accompanied your request, FBI cannot guarantee in any manner that this material contains the individual in whom you are interested.

Information shown on this Identification Record represents data furnished FBI by fingerprint contributors. Where final disposition is not shown or further explanation of charge is desired, communicate with agency contributing those fingerprints.

Notations indicated by * are NOT based on fingerprints in FBI files but are listed only as investigative leads as being possibly identical with subject of this record.

1-4 (Rev. 9-30-63)

UNITED STATES DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20537

11-6-64

J. Edgar Hoover
Director.

1-BU

The following FBI record, NUMBER none assigned, is furnished FOR OFFICIAL USE ONLY.

CONTRIBUTOR OF FINGERPRINTS	NAME AND NUMBER	ARRESTED OR RECEIVED	CHARGE	DISPOSITION
PD Berkeley Calif	Luis Walter Alvarez	FP 5-13-36 FP for civil ident purposes		
Bureau - AES Wash DC	Luis Walter Alvarez #5-E	appl FP 2-28-47		
Bureau - AES Wash DC	Luis Walter Alvarez #15	appl FP 4-24-47		

Since neither fingerprints nor an identifying number which is indexed in our files accompanied your request, FBI cannot guarantee in any manner that this material concerns the individual in whom you are interested.

THIS PAGE SHOULD NOT BE DISSEMINATED OUTSIDE FBI.

Information shown on this Identification Record represents data furnished FBI by fingerprint contributors. Where final disposition is not shown or further explanation of charge is desired, communicate with agency contributing those fingerprints.
Notations indicated by * are NOT based on fingerprints in FBI files but are listed only as investigative leads as being possibly identical with subject of this record.

U.S. GOVERNMENT PRINTING OFFICE : 1963 O—708-216

Identification Record Request
FD-9 (Rev. 11-28-56)

SIR

INSTRUCTIONS

1. *This form may be submitted in legible hand-printing.*
2. *Use separate form for each individual on whom record is requested.*
3. *Make effort to furnish FBI Identification Number or Law Enforcement Identification Number.*
4. *Furnish descriptive data and fingerprint classification only when FBI Number not available.*
5. *Indicate office for reply in lower-left corner only. Also list in lower-left corner all offices which should receive copies of available records. Include carbon of revised FD-9 for each office receiving copies and forward with original to Bureau.*
6. *Do not fill in block in lower-right corner.*
7. *Where available furnish Law Enforcement Identification Number and Military Service Number.*

To: DIRECTOR, FBI Attention: Identification Division

Date 10-26-64

Re LUIS WALTER ALVAREZ

Furnish The Known Identification Record of the Following:

Name	FBI No.
LUIS WALTER ALVAREZ	Other No.

Aliases LUIS SCHMOLL ALVAREZ 11-3 Wnl ufs

Sex	Race	Birth Date	Birthplace	Residence
M	W	6/13/11	San Francisco	4 Northampton Ave Berkeley, Calif.

Height	Weight	Build	Hair	Eyes	Complexion	Age
6'2½"	165	Slender	Blond	Blue	Fair	53

Fingerprint Classification

Scars, marks and tattoos
NC 93-781

Also Furnish:
- ☐ Photo
- ☐ Fingerprints
- ☐ Handwriting Specimens

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 04-09-2009 BY 60322 UCLRP/PJ/EHL

Return Reply to:
SAC, SAN FRANCISCO (105-16261)

Send Copies To: 105-16261-8

SEARCHED ___ INDEXED ___
SERIALIZED ___
NOV 11 4 PM '64

Identification Division's Reply 11-6-64
- ☐ On basis of information furnished, unable to identify:
  - ☐ Criminal Files ☐ Civil Files ☐ All Files
- ☑ Record Attached
- ☐ Photo Attached
- ☐ Photo Not Available
- ☐ Fingerprints Attached
- ☐ Handwriting Specimen Attached

b6
b7C

105-16261-8

OPTIONAL FORM NO. 10
5010-104

UNITED STATES GOVERNMENT

Memorandum

TO : SAC (105-16261) DATE: November 16, 1964

FROM : SA [redacted] b6 b7C

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 04-09-2009 BY 60322 UCLRP/PJ/EHL

SUBJECT: LUIS WALTER ALVAREZ
IS - R

On 10/26/64 [redacted] b6 b7C Personnel Security Branch, SF Operations Office, AEC, advised that periodically those employees of AEC contractors who are not investigated at regular intervals are asked to submit new sets of fingerprints so that they might be submitted to the Bureau to determine if the employee has any arrests since the last time his record was checked. ALVAREZ falls withing this category of employees but over the years he has consistently refused to be fingerprinted at intervals, insisting that he has been fingerprinted on several occasions and that there is no point in doing it again. In view of ALVAREZ' prominence as a scientist, AEC has refrained from making an issue of this but has also failed to meet its responsibilities in conducting the regular check.

[redacted] b6 b7C requested to know if there was any way this office could be of assistance in running a check of the Ident Division on Alvarez.

On 1/26/64 writer submitted FD-9 on ALVAREZm, Serial 8.

Ident record was subsequently received from Bureau and iformation appearing therein, all favorable, was furnished [redacted] on 11/16/64. He was also given ALVAREZ' finger print classification and was told to make future requests directly to the Ident Division, using the fpc and description. b6 b7C

RECOMMENDATION: File

KGT - 8
2 (1-105-16261)
1-80-461

SEARCHED ..... INDEXED .....
SERIALIZED ..... FILED .....
NOV 18 1964
FBI — SAN FRANCISCO

105-16261-9

ALL INFORMATION CONTAINED
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WHERE SHOWN OTHERWISE

~~SECRET~~

Classified Per OGA letter 01/26/2010

DIRECTOR, FBI (100-344677) 12/22/64

SAC, SAN FRANCISCO (105-16261)(C)

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1, 6)
DATE 04-14-2009

LUIS WALTER ALVAREZ
(S) ESPIONAGE - R

b1

OO: San Francisco

(S) Re Bureau letter to San Francisco dated 11/3/64.

b1
b6
b7C

On 12/1/64, Subject was interviewed by SA [redacted] in line with objectives of the [redacted] program.

ALVAREZ displayed considerable insight with respect to the Bureau's interests and responsibilities in the security field. He advised that although he has met numerous Soviet scientists in the past, he felt that his association with only one might have any intelligence significance. He identified this individual as [redacted] who is a Soviet representative at the European Center for Nuclear Research (CERN) at Geneva, Switzerland. He said [redacted] is the most Americanized Soviet national he has ever met. He believed this to be true because [redacted] father was [redacted] and [redacted] as a youth had an opportunity to see American motion pictures and to read American books and magazines which were reviewed by his father to determine their suitability for consumption by the Soviet public. As a result of this exposure to U.S. life, [redacted] speaks excellent idiomatic English and has an unusually wide knowledge of U. S. customs and way of life. ALVAREZ said that although he considers [redacted] to be a friend, they have avoided political discussions in the past and have confined their conversations to science, photography and harmless subjects. ALVAREZ said that [redacted] in his position, is not free of Soviet pressure. He stated that two years previously, when he was at Geneva, [redacted] on several occasions, broke dates to go sightseeing on the excuse that he had too much work.

b6
b7C

(S) 3 - Bureau (RM)
(1 [redacted]
(S) 2 - New York [redacted] (RM)
(1 [redacted]
(S) (2) San Francisco

b1

KGT:NMJ
(7)

Close

Tickler 12/31/64

~~SECRET~~

105-16261-10

SF 105-16261
KGT:NMH

Both ALVAREZ and [redacted] knew that this was a fictitious excuse because ALVAREZ saw [redacted] in the company of other Soviets who were sightseeing. During the previous year, ALVAREZ again met [redacted] at Sienna, Italy. On this occasion, [redacted] was the only Soviet scientist there and he showed no hesitancy about seeing ALVAREZ as much as he pleased. b6 b7C

ALVAREZ stated he had never received any indication that [redacted] was of intelligence significance. He presumed that [redacted] and other Soviet scientists may at times be requested to perform some minor intelligence function while they are abroad. b1 b6 b7C

(S) [redacted]

ALVAREZ stated he has always been alert to the possibility of becoming a target of Soviet intelligence, but had never detected any suspicious activities directed at him. He stated if he ever feels that he is of intelligence interest to the Soviet Union or any other country he will not hesitate to advise.

Inasmuch as there is no further investigation in this matter, this case is being closed.

RECOMMENDATION: Make administrative tickler to re-open in one year for possible recontact.

5-127 (Rev. 5-19-71)
OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

5010-106

UNITED STATES GOVERNMENT

Memorandum

TO : SAC, *San Francisco (105-16261)* DATE: *February 6, 1973*

FROM : Director, FBI *(100-344677)*

SUBJECT: *LUIS WALTER ALVAREZ*
ESPIONAGE - R

Bureau Informant 200, a most sensitive and reliable source, advised that *Luis W. Alvarez, Lawrence Radiation Laboratory* (individual or organization) of *University of California, Berkeley, California,* (address) was in contact with [redacted] *Joint Institute* (ss) *for Nuclear Research, Dubna, Moscow Oblast, USSR,* during *July, 1970* (month, year). b6 b7C

The foregoing and the following INFORMATION OBTAINED FROM BUREAU INFORMANT 200 IS NOT TO BE DISSEMINATED OUTSIDE THE BUREAU AND SHOULD NOT BE SET OUT IN ANY INVESTIGATIVE REPORT. INFORMATION FROM THIS INFORMANT SHOULD BE UTILIZED FOR LEAD PURPOSES ONLY AND ANY STATEMENT CONCERNING THE COVERAGE IN EFFECT IN THIS INSTANCE MUST BE AVOIDED. UNDER NO CIRCUMSTANCES SHOULD THE SUBJECT OR ANY UNAUTHORIZED PERSON BECOME AWARE THAT WE HAVE KNOWLEDGE OF THE ABOVE-MENTIONED CONTACT.

According to the informant, *subject declined an invitation to visit the USSR to present a lecture on "Trends in the Development of Tract Detectors B ased on Liquified Noble Gases" because he had already visited Dubna twice and thought it would be better if his younger associates doing research on the subject were invited in his place. He suggested* [redacted] *of the Lawrence Radiation Laboratory or, if he could not secure travel funds,* [redacted] *of the Space Sciences Laboratory of the University of California. The latter would probably secure travel funds from the National Aeronautics and Space Administration and the former from the U.S. Atomic Energy Commission. SEARCHED* [redacted] *had already requested travel funds to visit Dubna at Alvarez's suggestion.* b6 b7C

The above is furnished for your information in view of the Soviets' known interest in subject.

105-162611

~~SECRET~~

FBI

Date: 7/20/73

Transmit the following in _____ (Type in plaintext or code)

Via AIRTEL _____ (Priority)

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
~~WHERE SHOWN OTHERWISE~~

TO: ACTING DIRECTOR, FBI

FROM: SAC, NEW YORK (105- (RUC)

SUBJECT: DR. ALVAREZ
IS - CH
(OO: SF)

100-24095-35 ap 2 (ND)

(S) [redacted] The following information was provided by a confidential source who has furnished reliable information in the past. b1

(S) [redacted] b1

(S) [redacted] b1

105-32148
consolidate into
105-16261.
8/21/73 ls

Close 105-32148 + consolidate into 105-16261 + O+A [redacted] 8/21/73 b6 b7C

2 - Bureau (RM)
2 - San Francisco (RM)
1 - New York (105-115840)
1 - New York

TM:ned
(7)

~~SECRET~~

b6
b7C

Approved: _____ Sent _____ er _____
Special Agent in Charge

105-32148
105-16261-12

NY 105-

EXTREME CARE SHOULD BE EXCERCISED IN UTILIZING THIS INFORMATION. IT MUST BE SUITABLY PARAPHRASED IN ANY COMMUNICATION AND, IF DISSEMINATED OUTSIDE THE BUREAU, IT SHOULD BE CLASSIFIED AT LEAST "~~CONFIDENTIAL~~ - NO FOREIGN DISSEMINATION."

[redacted] b2 b7E

Recipient offices are requested to handle investigation in accordance with Section 105N, Manual of Instructions, and related instructions pertaining to contact cases [redacted] b2 b7E

[redacted]

security risk factors, a letter should be submitted to the Bureau containing such an evaluation and either closing the case or making a recommendation for further appropriate action. Interviews should be conducted only on Bureau authority following the request form set forth in Section 105N, Manual of Instructions.

If initial investigation develops insufficient information to resolve the matter, a letter should be submitted to the Bureau setting forth scope of investigation conducted to date with results and recommending further specific action deemed necessary on UACB basis.

No reference to this information should be made during any investigation and/or interview of the subject.

Copies of all correspondence containing results of investigation should be furnished NYO.

NY 105-

LEAD

NEW YORK

(S) AT NEW YORK, NEW YORK. Will, through sources remain alert for any continuing contacts on the part of subject with [redacted] or representatives thereof, or any other information which may develop that would be pertinent to this investigation. b1

This matter is being considered RUC.

X NYO indices contained no record identifiable with the subject based upon available information, or files of the NYO contain the following information:

Indices Search Slip
FD-160 (Rev. 3-23-71)

TO: CHIEF CLERK

Date 7-26-73

Subject: Luis Walter Alvarez

Social Security Account #:

Aliases: LRL, UC Berkeley

Address:

Birth Date	Birthplace	Race	Sex
6/13/11	SF	Cauc.	☑ Male ☐ Female

☐ Exact Spelling
☐ All References
☐ Main Subversive Case Files Only
☐ Subversive References Only
☐ Main Criminal Case Files Only
☐ Criminal References Only
☐ Main Subversive (If no Main, list all Subversive References)
☐ Main Criminal (If no Main, list all Criminal References)
☐ Restrict to Locality of

File & Serial Number	Remarks	File & Serial Number	Remarks
Dr Luis Walter Alvarez			
65-3986 *			
100-25567 *			
77-7441 *	(3/58)		
116-523 *			
105-16261 *			
100-0-34803			
100-25564-3			
100-29043-4			
100-28017-149 P.2			
117-12-4 P.2			
65-4154-19		Prev. Reviewed in 116-523 *	
100-17879-3664 P.23		& 77-7441 *	
65-4154-21	P.5, 22 (3/50)		
105-662-3	P.3 (5/50)		
-7	(6/50)		
66-1920-29	P.1 (1/51)		

Requested by: [redacted] b6 b7C

Squad: 57

Extension:

File No.: 105-16261-13

Searched by: [signature] 8/28/73 (date)

Consolidated by: (date)

Reviewed by: [signature] 8/28/73 (date)

File Review Symbols

I - Identical
NI - Not identical
? - Not identifiable
U - Unavailable reference

FBI—SAN FRANCISCO

GPO 043—16—81471-1 450-401

Indices Search Slip
FD-160 (Rev. 3-23-71)

TO: CHIEF CLERK

Date

Subject

Social Security Account #

Aliases

Address	Birth Date	Birthplace	Race	Sex
				☐ Male ☐ Female

☐ Exact Spelling
☐ All References
☐ Main Subversive Case Files Only
☐ Subversive References Only
☐ Main Criminal Case Files Only
☐ Criminal References Only
☐ Main Subversive (If no Main, list all Subversive References)
☐ Main Criminal (If no Main, list all Criminal References)
☐ Restrict to Locality of

File & Serial Number	Remarks	File & Serial Number	Remarks
65-4149-39			
-38 P.3			
100-3132-735 P.10 # (5/54)			
-685 A (5/54)			
-863 P.2 (6/54)			
-780 P.2 (6/54)			
-871 P.25 (6/54)			
100-16980-3281		Prev. Rev. in 116-523 & 77-7441*	
Louis W.			
100-16980-384			
-1672			
105-4028-33 (5/56)			
105-9728-7 P.2 (11/66)			
Louis			
100-0-91839 P.2 (6/59)			
100-3132-727 P.3 (5/54)			
105-625-1376 P.12 (3/65)			

Requested by | Squad | Extension | File No.

Searched by (date) 7/8/73

Consolidated by (date) 7/8/73

Reviewed by (date)

File Review Symbols

I - Identical
NI - Not identical
? - Not identifiable
U - Unavailable reference

P.2

GPO c43—16—81471-1 450-401

Indices Search Slip
FD-160 (Rev. 3-23-71)

TO: CHIEF CLERK

Date

Subject

Social Security Account #

Aliases

Address	Birth Date	Birthplace	Race	Sex ☐ Male ☐ Female

☐ Exact Spelling
☐ All References
☐ Main Subversive Case Files Only
☐ Subversive References Only
☐ Main Criminal Case Files Only
☐ Criminal References Only
☐ Main Subversive (If no Main, list all Subversive References)
☐ Main Criminal (If no Main, list all Criminal References)
☐ Restrict to Locality of

File & Serial Number	Remarks	File & Serial Number	Remarks
105-625-141 P.3 (4/65)			
105-18070-42 P.2 (1/66)			
65-4999-18 P.6 (6/65)			
Louis Walter Abrasz			
65-3986 *			
100-25567 *			
116-523 *			
77-7441 *			
Louis		Brief Review 116-523 *	
100-16980-1236		77-7441 *	
-1323			
-1356			
-1373			
-1374			
-1526			
L.W.			
105-0-331 P.1 (2/59)			
105-2563-3359 7 (12/63)			

Requested by | Squad | Extension | File No.

Searched by (date) 1/28/73

Consolidated by (date)

Reviewed by (date)

File Review Symbols

I - Identical
NI - Not identical
? - Not identifiable
U - Unavailable reference

P. 3

GPO 643—16—81471-1 450-401

8/29/73

AIRTEL AIR MAIL - REGISTERED

TO: DIRECTOR, FBI

FROM: SAC, SAN FRANCISCO (105-16261)(P)

SUBJECT: CHANGED
LUIS WALTER ALVAREZ aka
Doctor Alvarez
IS - CH
OO: San Francisco

Title is changed to reflect subject's true name.

Re New York airtel to Bureau, 7/20/73; SF 77-7441 report dated 4/10/58, SF 77-7441 report dated 6/14/71; Bufile 116-7905 and San Francisco 116-523.

On 7/25/73, a check of San Francisco Bay Area City Directories reflected the telephone number 843-2740 listed to University of California at Berkeley, Lawrence Radiation Laboratory (LRL). Directories further reflected that the subject is employed at the LRL, resides 131 Southampton Avenue, Berkeley 94707, residence phone area 415 - 525-0590. On 7/25/73, San Francisco indices reflected ALVAREZ the subject of re file.

On 7/27/73, check of 1972 - 1973 edition of "Who's Who in America", page 52, reflected the following information re subject:

ALVAREZ, LUIS W. physicist; born San Francisco 6/13/11; son of WALTER C. and HARRIET S. (SMYTH)A.; B.S. University of Chicago 1932, M.S. 1934, Ph.D 1936. Sc.D 1967; Sc.D, Carnegie - Mellon University, 1968, Kenyon College, 1969; married [redacted] 1936; children - [redacted] married 2d [redacted] 1958; children - [redacted] Research Associate, Instructor, Assistant Professor, Associate Professor University of California 1936 - 1945, PROFESSOR OF PHYSICS 1945 - PRESENT, AND ASSOCIATE DIRECTOR LAWRENCE RADIATION LABORATORY; radar

b6
b7C

2 - Bureau (RM)
1 - New York (105-115840)(Info)(RM)
2) - San Francisco
MAH/vsk
(5)

105-16261-14

research and development Massachusetts Institute of Technology 1940 - 1943, Los Alamos, 1944 - 1945. ALVAREZ also received the following awards Collier Trophy 1946; Medal for Merit 1948; John Scott Medal 1953; Einstein Medal 1961; National Medal for Science 1964; the Michelson Award 1965; Nobel Prize in Physics 1968; named California Scientist of the Year 1960. ALVAREZ is a Fellow, American Physics Society (President, 1969); member of the National Academy of Sciences, National Academy of Engineers, American Philosophy Society, American Academy of Arts and Sciences, Phi Beta Kappa, Sigma Xi. Home: 131 Southampton, Berkeley, California 94707.

Several attempts to locate identifying material in the local San Francisco newspapers re subject's trip to China negative to date.

On 8/22/73, [redacted] Security Division, San Francisco Operations Office, USAEC, Oakland, advised that the subject had recently returned from a trip to China; he further advised that Doctor ALVAREZ is planning to give a series of public talks in the near future at the Lawrence Radiation Laboratory Auditorium re his trip. [redacted] noted that as soon as Doctor ALVAREZ decides when he is going to give the lectures, [redacted] will notify this office. b6 b7C

On 8/23/73, SC [redacted] advised that the San Francisco Police Department (SFPD) files contain no information identifiable with ALVAREZ.

On 8/24/73, SE [redacted] contacted [redacted] Credit Bureau Metro, San Jose, California, who furnished the following information from her files re ALVAREZ: b6 b7C

Name and address as above, works as professor UCB, date of birth as above, on file since November of 1971. Residence as above, SSAN 559-50-0918.

Request for interview with subject re his China trip being forwarded under separate cover.

The following description of ALVAREZ compiled from serials in re files:

Born 6/13/11
at San Francisco

SF 105-16261
MAH/vsk

Race	White
Sex	Male
Height	6'2 1/2"
Weight	173 pounds
Eyes	Blue
Hair	Blond
SSAN	559-50-0918

LEAD

SAN FRANCISCO

AT SAN FRANCISCO AND BERKELEY, CALIFORNIA. Will maintain contact with [redacted] re subject's public talks re China trip and will cover those talks, UACB. b6 b7C

FD-379 (3-16-65)

EXEMPTED FROM AUTOMATIC DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1, 6)
DATE 04-09-2009

~~SECRET~~

DIRECTOR, FBI 8/30/73

SAC, SAN FRANCISCO (105-16261)(P)

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

LUIS WALTER ALVAREZ, aka
Doctor Alvarez
IS - CH
OO: San Francisco

RE: New York airtel to Bureau, 7/20/73 captioned ~~Doctor Alvarez. San Francisco airtel 8/29/73~~ captioned as above.

[redacted] b2

I. ALVAREZ resides at 131 Southampton Avenue, Berkeley, California 94707. He works as a professor in the Physics Department, UC Berkeley; and is a physicist at the UC Lawrence Radiation Laboratory (LRL). He is a Caucasian, born June 13, 1971, at San Francisco and is therefore an American citizen. His health status is not known, but may be assumed to be good, as he just returned from a trip to the China Mainland.

II. He married [redacted] in 1958, and her employment and citizenship are not known. b6 b7C

III. ALVAREZ is not known to have been associated with any subversive groups.

IV. ALVAREZ's wife is not known to be affiliated with any subversive group.

3 - Bureau (RM)
(2) - San Francisco
MAH/vsk
(5)

~~SECRET~~

105-16261-15

SF 105-16261
MAH/vsk

V. ALVAREZ's close relatives are not known to be affiliated with any subversive group.

VI. ALVAREZ is not known to be affiliated with, or sympathetic toward, any subversive movement or organization.

VII. On 8/23/73, SC [redacted] conducted a check of the San Francisco PD and Berkeley PD criminal files and could find no information identifiable with ALVAREZ. b6 b7C

(S) IIX. An interview with ALVAREZ could reflect what specific information the Chinese Communists are interested in learning from him; what their intents are re future joint scientific ventures with ALVAREZ and all U.S. scientists; [redacted]

(S) [redacted] b1

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

~~SECRET~~

[redacted] b6 b7C

UNITED STATES GOVERNMENT

Memorandum

TO : SAC, San Francisco (105-16261) DATE: 9/11/73

FROM : Director, FBI (100-344677)

SUBJECT: LUIS WALTER ALVAREZ
IS - CH

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-09-2009

Reurlet 8/30/73.

Authority is granted to interview subject in accordance with your request.

Interview of subject is not to be conducted on campus, and at outset of interview subject is to be advised that Bureau has no interest in legitimate educational activities.

If subject is cooperative, take no affirmative steps to direct his activities, but conduct complete background investigation of subject as required by Section
(S) 107C, Manual of Instructions, and thereafter submit request to Bureau for authorization to recontact subject [redacted] b1

Submit results of interview in form suitable for dissemination, together with recommendations for further action.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
WHERE SHOWN OTHERWISE

~~SECRET~~

SEARCHED ___ INDEXED ___
SERIALIZED ___ FILED ___
SEP 12 10 25 AM '73
FBI - SAN FRANCISCO

[redacted] b6 b7C

105-16261-16

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

5010-108

HON-4 (Rev. 6-8-73)

~~CONFIDENTIAL~~

[redacted]

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-09-2009

b6
b7C

TO: Director, FBI

DATE: 8/15/73

FROM: LEGAT, Hong Kong ( ) ( )

SUBJECT: LUIS W. ALVAREZ
IS - CH
(HONfile 105-11008) (RUC)

100-255674 (ND)
65-39864 (ND)
+ Clim #'s

[redacted]
IS - CH
(HONfile 105-11009) (RUC)

b6
b7C

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
WHERE SHOWN OTHERWISE

(C) Reference:

(C) [redacted] b1

(C) [redacted]

[X] Files of the Legat, Hong Kong Office, contain no information identifiable with the subject.

[X] Further information relating to the subject is set forth below.

Office of origin should review indices to determine further investigation warranted under guidelines set forth in Section 105-G, Manual of Instructions.

Remarks: LUIS ALVAREZ was born 6/13/11 in the U. S. Listed as traveling on U. S. Passport No. C2212528 issued 8/24/72 in the U. S.

[redacted] was born [redacted] in New York. Listed as traveling on U. S. Passport No. [redacted] issued [redacted] in the U. S.

b6
b7C

Subjects were a part of a group of American physicists who traveled to the PRC on the invitation extended by the PRC

7 - Bureau
(1 - Foreign Liaison Unit)
(3) San Francisco)
2 - Hong Kong Only 2 rec'd

SEARCHED ... INDEXED ...
SERIALIZED ...
SEP 14 9 15 AM '73
FBI - SAN FRANCISCO

RVP:il
(9)

~~CONFIDENTIAL~~

105-16261-17

[redacted]

b6
b7C

HON 105-11008
HON 105-11009

Academy of Science. The group was led by [redacted] of Princeton, New Jersey. b6 b7C

Permanent address for subjects shown as 131 Southampton, Berkeley, California.

Routing Slip
0-7 (Rev. 4-28-72)

(Copies to Off[redacted] Checked)

TO: SAC:

- ☐ Albany
- ☐ Albuquerque
- ☐ Alexandria
- ☐ Anchorage
- ☐ Atlanta
- ☐ Baltimore
- ☐ Birmingham
- ☐ Boston
- ☐ Buffalo
- ☐ Butte
- ☐ Charlotte
- ☐ Chicago
- ☐ Cincinnati
- ☐ Cleveland
- ☐ Columbia
- ☐ Dallas
- ☐ Denver
- ☐ Detroit
- ☐ El Paso
- ☐ Honolulu
- ☐ Houston
- ☐ Indianapolis
- ☐ Jackson
- ☐ Jacksonville
- ☐ Kansas City
- ☐ Knoxville
- ☐ Las Vegas
- ☐ Little Rock
- ☐ Los Angeles
- ☐ Louisville
- ☐ Memphis
- ☐ Miami
- ☐ Milwaukee
- ☐ Minneapolis
- ☐ Mobile
- ☐ Newark
- ☐ New Haven
- ☐ New Orleans
- ☐ New York City
- ☐ Norfolk
- ☐ Oklahoma City
- ☐ Omaha
- ☐ Philadelphia
- ☐ Phoenix
- ☐ Pittsburgh
- ☐ Portland
- ☐ Richmond
- ☐ Sacramento
- ☐ St. Louis
- ☐ Salt Lake City
- ☐ San Antonio
- ☐ ~~San Diego~~
- ☐ San Francisco
- ☐ ~~San Juan~~
- ☐ Savannah
- ☐ Seattle
- ☐ Springfield
- ☐ Tampa
- ☐ Washington Field
- ☐ Quantico

TO LEGAT:

- ☐ Beirut
- ☐ Bern
- ☐ Bonn
- ☐ Brasilia
- ☐ Buenos Aires
- ☐ Caracas
- ☐ Copenhagen
- ☐ Hong Kong
- ☐ La Paz
- ☐ London
- ☐ Madrid
- ☐ Managua
- ☐ Manila
- ☐ Mexico City
- ☐ Ottawa
- ☐ Paris
- ☐ Rome
- ☐ Singapore
- ☐ Tel Aviv
- ☐ Tokyo

RE: Luis W. Alvarez Date 9/11/73
IS-CH

☐ For information ☐ Retention optional ☑ For appropriate action ☐ Surep, by _____

☐ The enclosed is for your information. If used in a future report, ☐ conceal all sources, ☐ paraphrase contents.

☐ Enclosed are corrected pages from report of SA _____ dated _____.

Remarks:

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 04-09-2009 BY 60322 UCLRP/PJ/EHL

Enc.
Bufile — 100-344677
Urfile

10/30/73

AIRTEL AIR MAIL - REGISTERED

TO: DIRECTOR, FBI (100-344677)

FROM: SAC, SAN FRANCISCO (105-16261)(P)

SUBJECT: LUIS WALTER ALVAREZ, aka
Doctor Alvarez
IS - CH
OO: San Francisco

Re San Francisco airtel to Bureau, 8/29/73.
San Francisco FD-379 to Bureau, 8/30/73.
Bureau letter to San Francisco, 9/11/73.

Due to ALVAREZ's enormous travel commitments, unable to interview to date. However, he has expressed willingness to be interviewed first available opportunity after 11/1/73, when he again returns to the San Francisco area.

On 10/17/73, writer attended private showing of ALVAREZ's home-movies of his trip to China, which he was showing for the benefit of USAEC employees in Oakland, California. ALVAREZ commented at the outset of the movie that it was strictly an amateur's effort to record scenes of his trip to China, and viewing the movie bore out that observation. The movie lasted approximately one hour, and ALVAREZ kept his additional comments to a minimum. He then opened the floor to questions from the audience and responded to one question that the Chinese have sacrificed the freedoms we know in the U.S. for some meager benefits. He added that he observed almost a total lack of freedom of thought in the Chinese he met, and further that for a Chinese person to travel frequently from town-to-town was strictly out of the

2 - Bureau (RM)
2 - San Francisco
MAH/vsk
(4)

Searched
Serialized
Indexed
Filed

105-16261-18

question. He concluded that this situation might be well for them, but was impossible for him even to consider.

San Francisco will interview Doctor ALVAREZ as soon as possible upon his return to the San Francisco area and will furnish results of the interview and more complete description of movies shown, in a form suitable for dissemination.

UNITED STATES DEPARTMENT OF JUSTICE

FEDERAL BUREAU OF INVESTIGATION

In Reply, Please Refer to File No.

San Francisco, California

November 23, 1973

LUIS WALTER ALVAREZ,
Also Known As
Doctor Alvarez

On October 17, 1973, Luis Walter Alvarez, Ph.D., Professor of Physics at University of California at Berkeley (UCB), and physicist at University of California Lawrence Radiation Laboratory showed home movie taken by him of his tour through China in July, 1973. He showed the film to employees of the U.S. Atomic Energy Commission, Oakland, California, and other interested persons. The movie lasted approximately one hour and showed scenes of Alvarez and his wife, and other physicists who accompanied him, as they crossed the Chinese Border; visited various cities in China including Canton, Peking, Shenyang and Barien; as they visited such famous tourists attractions as the Great Wall of China, the Gate of Heavenly Peace, and Tien An Men Square, and various tombs of the ancient emperors; some of the evening dinners and banquets they enjoyed with their Chinese hosts and as they taught the skill of throwing a frisbee to various Chinese; various factories, shops, businesses, and laboratories they visited; and finally, as they departed China.

On November 2, 1973, Doctor Alvarez was contacted by a Special Agent of the Federal Bureau of Investigation (FBI). Alvarez advised that the Chinese apparently did not want to know anything from him as they did not ask him any technical questions. He advised that he, in turn, did not ask them any questions as he was strictly on a tourist-type trip. He noted that nothing was mentioned in his presence regarding future joint scientific ventures between the USA and China.

Regarding technical matters, Alvarez advised that absolutely no questions were asked by either side as they can sometimes be very embarassing to the recipient. He noted that some people are in the habit of probing, but that probing of that type is not Alvarez's style, and he does not like to do it. He noted that if the Chinese want you to know something, they will tell you and they obviously do not appreciate any unasked for inquiries.

105-16261-19

LUIS WALTER ALVAREZ,
Also Known As
Doctor Alvarez

Alvarez advised that according to his own observations, the Chinese are very, very weak scientifically because they shut down their entire school system for a period of four years. He stated that they are just now trying to rectify the situation, but it will take a long time to fill the enormous technical gap caused by that four year void in education.

Alvarez concluded that the had thoroughly enjoyed the trip.

Alvarez advised that he is aware of the responsibility of the FBI regarding the internal security of the United States, and would immediately furnish to the FBI any information which might come to his attention that could be of value in this regard.

Sincerely,
Luis

Diary of a Trip to China
(June 30 - July 22, 1973)

Luis W. Alvarez

I hadn't intended to keep a detailed diary of my China trip, the way I had of my first trip to Russia, in 1956. That diary was published in two parts, in successive issues of Physics Today, and syndicated by the United Press to their subscriber newspapers. I felt that I had done my job as a diarist on that trip and would leave such chores to the younger members of our group. So the first notes I made in my diary are very sketchy and intended only to remind me of what I was seeing or thinking at the time. But I soon found I was writing complete sentences and paragraphs, and I've been doing so ever since. (I'm writing this introduction after being in China for about half of our 22-day stay). I've fleshed out the rough notes I made on the first day, so the diary now has a fairly uniform quality.

This diary is intended only for friends and relatives, and for anyone interested in these matters in the Atomic Energy Commission, National Academy of Sciences, etc. It is in no way complete, and I have made no attempt to learn the names of the many Chinese scientists who have been so hospitable to us. Others in our party have good records of everyone with whom we've met -- someoneusually passes a sheet of paper around at a meeting, to record all the names. I can remember many of the faces, but I only remember the names of a relatively small number of the people we've met. Whoever made the old statement that all Chinese men look the same had most probably never been here; I find an enormous variation in their faces, and I have no difficulty in picking out someone I've met only casually, in a large crowd. But I don't have "the hooks on which to hang the names" -- I find it difficult to remember the surname, with two given names tagged on afterwards. Although I'm slowly getting better at this, I won't attempt to make this very informal diary an accurate record of the people with whom I've talked. China is too big and strange and fascinating to worry about such details on one's first visit. And in addition, the casual reader will have even less ability to remember Chinese names than I do, and the serious student at the AEC will have detailed lists of everyone in Chinese science, with his present job title, and his early history, just as we have "American Men of Science" to tell us what any American scientist has done in the past and is now doing.

This diary is then simply a record of what I thought was interesting when I was in the mood to write it. On a few occasions, I've taken down almost verbatim, the remarks of various "vice-chairmen of revolutionary committees", because it can be done rather easily during the extra time that is available when one is communicating via an interpreter. I've done this largely to give the effect of sitting in a discussion group and listening to a dedicated revolutionary Communist Party member telling of the things of which he is most proud. I find such transcriptions tiring and conducive to writer's cramp, so they usually don't go on too long.

Those readers who aren't physicists will have no trouble skipping over the technical notes that concern the laboratories we visited. And I hope that any readers who really know China will forgive the errors that must certainly have crept into this diary.

I've referred to the members of our party for the most part by their first names, so I should now identify them. Since we have been placed in a strict protocol order by our Chinese hosts, I hope you will forgive me if I list them in that order below: [redacted] was asked if [redacted] was our leader, and he replied, "The Chinese Scientists made him our leader while we are in China -- when we are in our country, we don't have any leader.") b6 b7C

1) [redacted] and [redacted]
(Professor of Physics at Princeton)
[redacted] and [redacted] visited China last summer. [redacted] b6 b7C

2) Luis W. (Luie) and [redacted] Alvarez
(Professor of Physics, University of California, Berkeley)

3) [redacted] Professor of Physics, Berkeley
[redacted] Professor of Art, Laney College, Oakland, Calif.

4) [redacted] and [redacted] b6 b7C
(Professor of Physics, M.I.T., Cambridge, Mass.)

5) [redacted] and [redacted]
(Associate Director, National Accelerator Laboratory, Batavia, Illinois. (Professor of Physics on leave from University of Illinois, Urbana, Illinois)).

6) [redacted] and [redacted]
(Professor of Physics, University of Illinois, Urbana, Ill.)

7) [redacted] National Accelerator Laboratory, Batavia, Ill. b6 b7C

8) [redacted] and [redacted]

I'm now home, and I'll finish this introduction with a few remarks. My main reaction to China was an enormous admiration for the people and what they have accomplished since liberation. They have taken a country which was formerly in more of a mess than India, and have eliminated starvation, poverty, great wealth, crime -- to a very large degree, opium addiction, prostitution, sale of daughters by poor peasants, venereal diseases -- they can't find a case to show to medical students, just as we can't find a case of small pox, flies -- this is what "old China hands" find quite unbelievable, and to a large extent, freedom. Most Chinese find the loss of freedom a small price to pay for the obvious gains. However, for this reason, I consider "China is a fascinating place to visit, but I wouldn't want to live there." I hope that after one or two more cultural revolutions, they will reintroduce freedom, and model their increasingly developed country on Sweden, which considers itself to be Socialistic, but which I always find to be "more American than the U. S." when I visit there.

One of the most impressive facts about China is the great "sense of national purpose" that grips the people. Although I may already have said it in my diary, I'll say again that this attribute hasn't been seen in our country since World War II, when everyone felt happy at the sacrifices he was making in the national interest. Patriotism of that form has "gone out of style" in our country, but it is alive and well in China.

In conclusion, I'll make the obvious remark that it is hard to know China even after a lifetime of study. I don't believe that my observations in this diary have any value in adding to our knowledge of China; they will be of interest only to other scientists who plan trips to China, and personal friends who can see part of what I saw through my eyes, "as it was happening". I was one of many "blind men feeling an elephant", and I've neglected to comment on many things that were even apparent to such a blind person as myself. For example, I don't believe I mentioned the "cadres" -- the party members who are in every organization, at all levels, paralleling the ordinary management. The "vice-chairmen of revolutionary committees", in universities and laboratories, were the top cadres, and they usually gave us our briefings on the work of the organizations. On some occasions, the top cadre was a very competent physicist, but on others, he seemed to be more of a pure party man.

With no problem at all, I could go on for thousands of words in this introduction, but I'll stop with a final observation. The Chinese were wonderful hosts, at every level in the whole country. They seemed pleased to have us as guests in the country of which they are so justifiably proud. I believe that we responded with friendship to their friendship, and I'm proud to have been a member of a party that was so successfully a bridge between the peoples and the scientists of our two countries.

June 30, 1973

We left the Hong Kong Hotel at 8:30 this morning, and our porters pushed our bags across the street to the Kowloon railroad station, and to the train labeled "Canton". After riding for an hour and a half through the "New Territories" (a part of the Crown Colony of Hong Kong that was leased by the British from the Chinese almost one hundred years ago -- for 100 years) we stopped at the border. We passed through British Customs and then walked across the covered bridge into the Peoples' Republic of China. (No trains cross the bridge.) I took movies of [redacted] walking across the bridge, with the Union Jack flying from a pole on one side, and the red flag of China on the corresponding pole on the other side. b6 b7C

The Chinese customs inspection was quite perfunctory -- health certificate and declaration of money and gifts being carried into the country. We spent two or three hours in the Chinese building at the border -- first of all getting acquainted with our hosts who came from Canton to greet us. Although we were originally invited by the Academia Sinica (The Chinese Academy of Sciences), we now find that our hosts are the Science and

Technology Association[redacted] the Academy. Two administra[redacted]s from the Canton office of the Association, plus two of their interpreters are now talking with [redacted] the leader of our delegation. There are several reception rooms on the second floor of this building, and as I've walked by, I've seen a delegation in each room getting to know their future traveling companions, either from the China Travel Service -- corresponding to the Russian Intourist Agency -- or from the organization which invited them. The China Travel Service is geared up to handle groups with a designated "leader of the delegation." On the train from Hong Kong to the border, I talked with members of a delegation from the California Teachers' Association, who sat across the aisle from me. They seemed quite surprised that their applications for visas had been honored by the Chinese Embassy in Ottawa, when it is known that tens of thousands of similar applications have been turned down for lack of "Intourist facilities" in China. No one knows why one delegation gets its visas, while many others do not.

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It is hot and muggy in our reception room, but the several electric fans behind our easy chairs make the weather almost tolerable. The chairs have lace doilies on the arms and backs, but every time I lift my arm from the chair, the doily sticks to my sweaty skin, and I have to peel it off and replace it. We've had several cups of tea while [redacted] has been conferring, and we expect to have lunch soon.

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The lunch was excellent, as all visitors to China have testified. Each delegation sat at a separate table or pair of tables. The various dishes contained more protein than I would have expected - omelette, pork and chicken. We were introduced to Cantonese beer, which had an unusual sweet taste, but was quite pleasant. It was obvious that everyone of us was proud of his technique with chopsticks -- either from long experience, or from a crash course.

After changing some money into yuan (1 yuan is about 50 cents), and helping ourselves to free copies of Chairman Mao's "little red book" -- available in almost any language one could want -- we boarded the train for Canton.

The roadbed is so smooth that is easy to write as we speed toward Canton. American railroad tracks were this smooth when I was in college, but I haven't experienced anything like this outside of Europe, in many years -- except for a recent ride on BART, the Bay Area's new rapid transit system.

When [redacted] talked about his trip to China last summer, he spoke of the sudden change in the cleanliness of the countryside, as one passed the border, with the Chinese Peoples' Republic getting the good marks. I looked for such a change but it was undetectable to my eye. After leaving the elegance of Kowloon any farmland looked dirty to me, regardless of its position relative to the border.

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We're now passing through tropical terrain, with banana trees, sugar cane and terraced rice paddies. I'd like to take movies, but there are regularly planted trees on each side of the right of way. We pass through small villages and see peasants plowing behind water buffaloes.

Some peasants are leaning against a horizontal pole and "walking in place", on pedals that turn waterwheels that irrigate the fields.

In the train, the loudspeakers are going all the time. Sometimes a girl is speaking in a harsh voice, and at other times, Chinese music is being played. A girl carrying a big tea pot of boiling water walks up and down the aisle, replenishing emptied tea cups. Tea is served in cups that come with matching china covers. Most of my tea leaves have gone to the bottom of my cup, but enough of them ring the surface of the liquid that I find it difficult to drink. Our American tea bags haven't prepared me for this problem.

We don't see any automobiles, but there are lots of bicycles. The peasants wear wide-brimmed straw hats, and many of them carry their loads in a pair of baskets slung from the ends of a bamboo pole resting on one shoulder. When I was a boy in San Francisco, our Chinese vegetable man brought his wares to our house in similar fashion.

When we arrived in Canton, cars were waiting to take us to the Tung Fang Hotel, where [redacted] and I are now resting for half an hour. The ride through the streets of Canton was fascinating. Ours were just about the only passenger cars we saw, although there were some trucks and jeep-like small vehicles on the streets. The bicycle traffic is unbelievably heavy, and in addition there are tricycle trucks of a standard design that are pedaled by men who would have been called coolies before liberation. And one rung lower on the social scale are those who push and pull wagons loaded with goods of all sorts. b6 b7C

The hotel is large, but its capacity will be about three times greater when the construction now under way is finished. The Chinese government is acutely aware of all the visa applications they can't honor for lack of accommodations, so they are building new hotel rooms and training English-speaking interpreters like mad.

When we arrived at the hotel, our bags were carried up to our room and we were told not to insult the comrades by offering them tips. Our delegation was ushered into a reception room where we were served tea and introduced to the physicists from Sun Yat Sen University, who had come to greet us. After our rest, we assembled downstairs and re-entered our cars -- in protocol order -- for a sightseeing tour of Canton. We are in a caravan of 9 cars. This seems a bit wasteful, because our two bachelors, [redacted] and [redacted] each has a car to himself, and there is a lead car ahead of [redacted] car, to blow its horn and clear a path through the intense bicycle traffic. b6 b7C

[redacted] rode in our car, next to the driver, and explained to us in good English what we were seeing. Compared to the streets of Kowloon, Canton is pretty drab. There are none of the bright signs that advertise what is being sold in the various shops. Everyone seems busy with what he is doing, and at this hour more than half of the people in sight are pedaling their bicycles homeward. There are usually three bicycles abreast going in each direction, and our procession of cars goes down the center of the street and seldom meets any automobile traffic going the other way. I didn't notice any traffic lights and we never had to slow down at any intersections. b6 b7C

We drove along the waterfront of the Pearl River and across one of the bridges. Canton is for the most part rather flat, but we drove to the top of a hill, in a park with a monument (much like that on Bunker Hill) to Sun Yat Sen. At the top of the hill, there is a five-story museum building devoted to the history of Chinese procelain. After we had visited each exhibit, and listened to an explanation in Chinese -- translated into English, we sat on the porch on the top floor, had tea and looked at all of Canton stretched out below.

On the way home, we passed the large buildings of the Canton trade fair, which is held twice a year -- in the spring and fall. Buyers from all over the world attend the exhibit of Chinese products, and bargain over the prices to be paid. In spite of the artificial level at which the yuan is set relative to world currencies, we are told that the Chinese trade experts drive hard bargains, and if their prices aren't accepted, they are content not to sell any of that product that year.

We returned to the hotel for dinner in what happily turned out to be an air-conditioned main dining room. Our hosts and interpreters disappeared, so our delegation ate by ourselves at two neighboring round tables. After dinner, our friends reappeared and took us for a drive through the darkened streets of the city. The ubiquitous bicycles don't have lights, so the car drivers had to be very cautious. We stopped at a "Friendship Store" on the way home. These stores are set up to sell only to foreigners, and the items for sale range from Mao lapel pins to carved jade and paintings priced in the ten thousand dollar range. [redacted] bought a few blue Mao caps, but to keep our baggage light, we'll look in the Friendship Stores as we go, and do all our buying in Shanghai on the way out. On the way back to the hotel, we passed a stadium where some game was being played. I'd never before seen a bicycle parking lot with more than 50,000 bicycles in it, but now I have.

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Sunday, July 1, 1973

We left the hotel at 8 A.M. in our caravan of cars to visit an old temple that is now the center of a manufacturing commune. We drove for half an hour to the entrance of the temple, that was swarming with families who were making Sunday excursions to see some of the grandeur of the old China. (I learned that the Chinese work week is 48 hours -- 6 eight-hour days. That didn't surprise me, but the fact that Sunday is the holiday did seem odd to me. The Arabs rest on Friday, and the Israelis on Saturday, so it surprised me to learn that Chairman Mao had validated the holy day of the despised missionaries, when he could as well have chosen a characteristically Chinese weekly holiday.)

I asked what kind of temple we would be seeing; was it Buddhist, Taoist, or Confucian? The answer was that it was no particular kind of temple -- "just a temple". We inspected a number of the temple buildings and were impressed by the carvings and the typically Chinese decorations. I'll adhere to the old Confucian proverb equating one picture to a thousand words; if anyone wants to know what the temple looks like, he can look at the movies or photographs I took this morning.

We visited two of the factories in the temple commune. The first was a "paper cutting factory" that produces an art form characteristically Chinese. The finished product is a sort of lacy thin sheet of metallized paper cut in the form, for example, of filigreed birds, flowers, wild animals, etc. Each floor of the factory had an artist who was drawing designs for the cutters to follow with their sharp knives, and dozens of tables at which the teen-aged cutters worked. Each cutter pushes his (mostly her) razor point through a stack of about two dozen sheets of metallized paper and cuts out the unwanted areas. It is exceedingly delicate and exacting work, and none of the cutters wore glasses. Samples of the work were for sale in the tea room, and several of the girls in our party bought them.

The largest factory in the commune is a silk mill where silk cloth for export is woven on large looms. We started in the design department where artists were sketching patterns to be reproduced on the silk cloth. The patterns were then encoded on punched cards, by operators at a series of punch presses. Although we all knew that the modern IBM punched cards were descendants of the punched cards that controlled looms more than a hundred years ago, it is probably true that none of us had ever seen such a loom in operation. When we went out on the floor of the factory, there were scores of such looms noisily making silk cloth in many beautiful patterns.

After the very interesting tour of the textile factory, we visited the nursery in which the children of employees are cared for while their mothers work. We were treated to a song and dance show by the children, which I also recorded on film. (Note added later: All the movies and stills we took came out beautifully. I've edited the movies down to just under an hour, by throwing away about half of the footage I took. But that is the only way to make a good movie. I had two movie cameras: a standard Bell and Howell zoom lens camera for outdoor shots, and one of the remarkable new Kodak f1.2 cameras with Ektachrome 160 speed film. This permitted me to take good movies in the lowest light levels I experienced -- even in the Ming tombs and in dimly lighted restaurants. My guess is that some of the things I photographed this way have seldom if ever been recorded before on movie film.)

After lunch at the hotel and a nap, all the physicists met for a 2-hour scientific discussion, with [redacted] Sun Yat Sen University (head of the Physics Department) and [redacted] - spectroscopist at SYSU. Before the 2 Chinese physicists arrived, I produced a Frisbee and taught 2 of our interpreters how to throw it down the long wide, Russian style hallway outside the meeting room. They quickly became experts and enthusiastic about their new skill. I also instructed the 2 girl maids and the elevator boy, and they played Frisbee outside our meeting for some time. I could see the Frisbee whistling past the door, during the scientific discussion. I had [redacted] take my movie, talking with [redacted] and [redacted] -- I suddenly realized I could take 40 rolls of movie film and never have any record that I was in China -- now that is taken care of.

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We were guests of honor at a banquet hosted by the Vice Chairman of the Kwantung Provincial Revolutionary Committee, (of which Canton is the capital). [Corresponds to Lieutenant-Governor of California.] (Note added

later -- since there are no chairmen but Mao, this man more probably corresponded to Governor Reagan). There was the usual tea and then into the dining room, with three round tables. [redacted] and I were at the head table -- [redacted] and [redacted] on each side of the Vice Chairman. All food was served to us by the Chinese gentlemen on either side -- with chop sticks. There were many courses -- very good Cantonese food. Many toasts in Mao Tai (120 proof) -- "Kam Pei" (pronounced Gomb Bay!) means bottoms up. [redacted] b6 b7C went Kam Pei 3 times -- each time turning his glass upside down to show he had really drained it. I only did this once, but I drank lots of beer and orange soda, to make up for water loss, due to the great heat here in Canton. I was very happy not to be ranked No. 1, which carries a great responsibility that [redacted] handles easily and well.

Monday, July 2, 1973

After a western style breakfast of eggs and toast, we are off for a visit to the Physics Department, Sun Yat Sen University. I'm now sitting in the standard horseshoe pattern, behind tables holding tea, with [redacted] next to the Vice Chancellor of the University, who is now talking through our interpreter. b6 b7C

-- Notes about our hotel -- There are no room keys, but there is a Russian style desk near the elevator, whence traffic in the halls can be monitored. Last night, as we came down from the top floor (8) to our floor (7), I started down the nearest staircase. This seemed to cause a lot of concern by some of the Chinese, but others said it was O.K. to go down that way. We walked through a hall where a Chinese basketball team was housed. (I had seen the party of very tall Chinese earlier that day, and had said -- "that must be a basketball team" -- most Chinese are under 5'10".) So the concern was that we went through a section of the 7th floor that we shouldn't have been in. b6 b7C

We had a good visit with [redacted] who has studied nuclear physics at the Bohr Institute in Copenhagen; he speaks good English and is now making solid state devices for practical uses, e.g. Cadmium Sulphide.

After a tour of the labs, we are back to the tea horseshoe, talking about Physics. Since the Cultural Revolution (1966-70), admission to the universities can only be applied for from a commune, where the former middle school (high school) student has worked for 2 or 3 years. The workers in the commune (who could mostly be rice planters) decide which members of the commune shall be recommended to the university. A prospective student applies not only to the University, but also to the particular department, and tells what sub-field he wants to follow for the rest of his life. We asked how a member of an agricultural commune, selected by his commune associates for political reliability, group consciousness, health, etc. could know that he wanted to become a solid state physicist or particle physicist before he knew anything about the most elementary principles of physics. The reply was that it was decided for him. This reminded me of a Jesuit priest who told me he had been ordered to take graduate work in geophysics and get a Ph.D. in seismology.

I showed [redacted] and some others how the HP-45 worked. They were familiar enough with modern technology that I felt they wouldn't be snowed. [redacted] then tried several problems with it and I helped him. He was very excited at what it could do. b6 b7C

I had a talk with Professor [redacted] about western physics journals and how they are distributed to Chinese libraries. As a former president of the American Physical Society, which publishes the Physical Review, I've sat through countless hours of discussion on such matters. There are no Chinese physicists who have personal subscriptions to the Physical Review, but I know nothing about Chinese library subscriptions. I asked if it would be helpful if our society sent microfilm copies of our journals to China, via air mail, so that the information would be available more quickly and would be more widely circulated. For some reason, Professor [redacted] considered this to be a somewhat insulting suggestion, which she rejected as being not worth discussing. She said the present arrangement was quite satisfactory, with several copies of the Physical Review being available in several libraries throughout China. She said that if anyone wanted some information about an article published in the Physical Review, he could write to one of these central libraries, and a copy of the article would be mailed to him. This is obviously a ridiculous situation, but perhaps I misunderstood what Professor [redacted] said. At any rate, there wasn't anything more I could say on the subject. b6 b7C

Now we're about to leave our hotel after an early and very delicious lunch.

Lots of our Chinese friends drove to the airport with us and we sat and talked for most of an hour before we could board the plane. I showed [redacted] how to use the HP-45, and he asked where it could be purchased and for what cost. I gave him the HP-35 number and price and the Palo Alto address. b6 b7C

We are now flying to Peking in an IL-62 Russian-Built copy of the VC-10 4 jet airliner, with Chinese airline markings -- all Chinese characters -- no latin letters, but with a tail number in "Arabic" numerals. Our party fills the 16 seats in the first class compartment. (14 Americans + 2 interpreters.) [redacted] and I were assigned seats 9-1 and 9-2, but when we boarded, we found [redacted] in the window seat. He offered to move but [redacted] said, "Luie can sit in your seat for awhile". I said that would "throw" the interpreters, and it did. They spent more than five minutes trying to get [redacted] out of my seat, but with no success, since both he and [redacted] said I was happy where I was, and I nodded agreement. They finally gave up after a very long discussion. They can't believe that an older person would give up his choice seat to a much younger person. Photographs were allowed at the airport, but no pictures can be taken in the plane -- either looking inside or outside. b6 b7C

We are scheduled to land at Hangchow pronounced Hahng-joe.

We walked from the plane to the airport through the hottest weather I've experienced since Luxor on the fourth of July. Fortunately, the airport building was air-conditioned and we drank lots of beer and orange pop. Back on the plane and up through heavy cumulus clouds, dodging around tall thunder heads. For the last hour of the 1½ hour flight we were

in solid overcast, with turbulence frequently building up. In the western world, where there is lots of traffic and good ground control from radar sets, one is no longer worried about such turbulence because earlier planes report safe passage and thunder storms can be seen on ground-based radar and the planes steered safely around. Also U.S. jets carry radar that can see the most turbulent areas -- which contain heavy rain -- so there is on-board sensing of danger. But without knowledge that our IL-62 had radar, and with the knowledge that there is almost no air traffic in China, I was quite concerned that we would run smack into an "imbedded thunderstorm". I soon found that [redacted] -- also an instrument-rated pilot -- in the seat ahead was similarly concerned. We had been told that Chinese pilots didn't fly in heavy rain, and here we were, making an approach to Peking in solid overcast, heavy rain on the windows, gear down, flaps down -- so we were close in -- and the pilot making much larger angular corrections to his course than he should, that close to the landing point. We broke out of a 300 foot ceiling and we must have been on a VOR approach, rather than the ILS approach used at all large airports in the western world. (On the ground, I saw our plane had weather radar). Everyone else was unconcerned, but [redacted] and I were very glad to be down -- the pilot had had no glide slope information on the approach -- nothing but his altimeter to tell how high he was. b6 b7C

The first thing we saw on the ground was a C-135 with United States of America markings (Boeing 707 with no windows) that we learned had just brought furniture and supplies to [redacted] and the new U.S. Liaison office. b6 b7C

We drove into Peking (pronounced Bay Jing) in our procession of cars in pouring down rain. We're staying in the Peking Hotel, at the S.E. corner of the Imperial Palace. I went down our hall to get a glimpse of it when we came upstairs. Of course, at the airport, we were met by a big delegation and sat for our tea ceremony before leaving for the hotel. My host in the car and at the banquet was [redacted] the director of the Institute of Atomic Energy. b6 b7C

It was 69° in Peking, which is the coolest we've seen. We wore coats and ties to the banquet, which was conducted in the same style as the night before -- in the large dining room of the Peking Hotel. [redacted] served me all my food and I ate "thousand year old egg" (very black hard boiled egg) and sliced jelly fish plus a lot of other things I was glad no one told me what they were. I find I am terribly fond of Chinese food, but I don't like the banquets a bit. I've never liked hors d'oeuvres or smorgasbord-type goodies, and the first courses at the banquet are of this type. So I guess I'll continue to enjoy my western breakfast, my Chinese lunch, and somehow struggle through my Chinese banquets. b6 b7C

Tuesday, July 3, 1973

After breakfast, we'll visit the Imperial Palace, (now called the Palace Museum) so I'll make a few observations on how Peking is laid out. Most Americans watched President Nixon drive from the airport past the Gate of Heavenly Peace, on his way to the guest house where he stayed.

Most of that trip was westward along the exceedingly wide boulevard that extends east and west across the whole width of the city. The boulevard was cut straight through the old city, just as Napoleon cut the Champs Elysees through the old city of Paris. Perhaps the easiest way to describe the central area of Peking is to compare it to central New York City. Central Park is oriented in the same direction as the Imperial Palace, and is about 50 °/o wider and longer than the palace grounds. The boulevard I've just mentioned could be carved out of New York City by using 59th Street (at the southern edge of Central Park) and extending it southward almost to 58th Street. The entrance to the Imperial Palace grounds is through the Gate of Heavenly peace -- near 6th Avenue and 59th Street. Across the boulevard from the massive gate is an enormous area of pavement -- one of the largest paved areas in the world -- almost 100 acres. It is called Tien An Men Square. On the western edge of this square is the Great Hall of the People, where Chao En Lai gave his banquet for the President that was seen live on TV.

The Peking Hotel where we are staying would be located on the East side of Fifth Avenue, north of 59th Street. It was built early in this century by French business men, and is a typical European hotel. It is having its capacity more than doubled by construction work now in progress. We were driven the short distance from our hotel, through Tien An Men Square to the Gate of Heavenly Peace. We walked through the arched doorway, under the huge portrait of Chairman Mao, to find ourselves in a courtyard, with another gate ahead of us. This gate building had another large portrait of the Chairman over its archway. But after this introduction to the Imperial Palace, or Forbidden City as it is frequently called, we saw no reminders of the new China. We could imagine that we were honored guests of the Emperor, from some foreign land.

The palace grounds extend northward in a seemingly endless series of courtyards, each with an elevated throne room, with a pagoda roof. From each courtyard to the throne room is a gently sloping staircase, with a ramp in the center section of the stairway. The Emperor was carried up the ramp in his sedan chair, and if any commoner was found walking on the ramp, his head was chopped off. The ramps were carved in deep relief, and were made of a single stone of enormous weight. Because of my interest in the Egyptian pyramids, I've read most of the literature on the movement of monoliths by primitive people. The ramp stones of the Imperial Palace are impressive examples of this art, even though the engineers who moved them had access to some modern machinery, and to the wooden rollers that weren't known to the Egyptians.

I won't try to recall the names or uses of the many throne rooms we visited. I remember one that the Emperor seldom used, but which was employed in the certification of the scholars who were honored members of the Imperial court. Another one of the raised pagodas was used as a private "resting house" for the Emperor, who was exhausted by the exercise of his Imperial duties in the official throne room.

After visiting the more public buildings of the Palace grounds, we wandered through the private quarters where the Imperial family lived. Most of the Palace buildings date from the Ming Dynasty (about 1350 to 1650), and the later Ching Dynasty, the "Manchus", who were eventually

overthrown by Sun Yat Sen in 1911. The last of the Manchus was the Dowager Empress -- the "Dragon Lady", who ruled as regent for fifty years. She was a concubine who bore the Emperor his only son, and this was her key to power. She was regent, first for her son, and after he died, for her nephew. She was a master of intrigue, but her inadequacies as a ruler led to the overthrow of the Manchus by Sun Yat Sen in 1911. (She died in 1908.)

We walked through the rooms where these people lived, and I remember one small throne room where the Dragon Lady could sit behind a screen and whisper advice to her son.

As befits the modern name of Palace Museum, we found many rooms filled with the great treasures of the old China. I expressed surprise that I could see no museum guards. The interpreter said it wasn't necessary -- the treasures now belonged to all the people of China, so no one would think of stealing from himself!

We stopped in what appeared to have been a private library, and had tea on Ching Dynasty procelain. Everyone spent most of this time concentrating on not dropping the tea cups. The guide told us there were 9000 rooms in the Forbidden City. (To take account of the many large rooms, they use a convention that every 4 pillars in such a space is considered to outline a countable room.)

After tea, we visited more museum exhibits, and saw the art work and the state of technology of China during the Ming and Ching Dynasties. I saw two very intricate crossbow triggers in bronze, and a spectacular "mummy case" made of squares of jade, about 2 inch by 2 inch, fastened together with pieces of gold wire. Some of the finest exhibits were unearthed in Shensi province during the Cultural Revolution.

In the early afternoon, after lunch at the hotel, we returned to the Palace Museum for a look at more national treasures. I can't do this visit justice, so I'll mention only a few objects that caught my fancy. There were two large and intricately carved pieces of jade, each close to a cubic yard in volume! Each had several hundred small figures of men and animals carved to show most of the activities that the people of China engaged in at the time. There were rooms filled with chain mail and the swords and lances of the middle ages. I'm the last person who should try to describe a museum, so I'll stop here.

[redacted] was stricken with severe cramps this morning , and is resting in bed this afternoon. Someone thought she might have hepatitis, but I said a quick examination of her eyeballs for yellow in the white of the eye would tell the story. No yellow, so that isn't the problem. b6 b7C

[redacted] one of our interpreters from the Academy of Sciences, was in Berkeley last December. I told him then that I'd like to go to China, and that I'd written to the Chinese Academy in about 1963. He remembered that today, and said that he'd looked for my old letter when he returned from Berkeley. (Because of the political climate in 1963, I had "touched base" with [redacted] who was then President Kennedy's Science Adviser.) b6 b7C

We are now spending the late afternoon in conference with 9 Chinese physicists, trying to schedule the talks by the American visitors. They want me to talk about bubble chambers and data reduction, in addition to my pyramid lecture.

[redacted] met this morning with our hosts, trying to firm up our travel schedule. Apparently we won't go to Yenan and Sian, but may go to the world famous commune at Tachai (Da-Chy). Early this afternoon, we learned that we are invited to stay an extra week in China, perhaps going to Manchuria. [redacted] and I will go out on schedule, because of our responsibility to [redacted] and [redacted] They expect us back a few days after they return to Berkeley. It seems that we won't be able to go to Foochow-- (where my mother was born and lived till she was 14) -- it isn't an "open city", perhaps because of its proximity to Quemoy and Matsoy. b6 b7C

We had our first "cocktails" before dinner in [redacted] room -- Mao Tai (or equivalent) and water plus ice. We hurried dinner to get to the "PLA* song and dance show". I expected a sort of "amateur night", with the peasants of the PLA "doing their thing". Instead it was a beautifully professional show in the style of the Moiseyev Ballet Company (but with a bit less gymnastics). There was lots of singing -- a chorus of 60 male and female voices, all dressed in PLA uniforms; a full symphony orchestra and smaller groups playing strange Mongolian instruments; excellent ballet scenes, but with no one on her toes; solo singing with accompaniment on a concert grand piano, etc. etc. I took my low light movie camera and got some shots before the intermission from my seat half way back. During the intermission, I asked [redacted] if there might be an unoccupied seat closer to the front, and he put me in the front row, on the aisle. The seat next to me was also unoccupied, so I guess he didn't have to eject anyone. I shot about a roll of 160 film and if something doesn't go wrong in the development, they should be excellent records of a memorable evening. b6 b7C

Wednesday, July 4, 1973 (our day of liberation!)

We visited the Institute of Physics (of the Academy of Sciences), Professor [redacted] -- director (Yale Ph.D.). [redacted] pointed out that there are no red lights for Red Flags -- whenever the traffic policeman sees a Red Flag coming, he stops the cross traffic and lets the big black car, and its following gray cars through. b6 b7C

We are now sitting with the director, drinking tea, and hearing what is done here.

Activities of the Institute.

1. Theoretical Physics (General Rel. and gravit. waves)
2. High Temperature Plasma experiments. θ pinch, laser heating, etc.
3. Magnetic materials - ferrites for computers
4. Lasers - Argon and semi-conductor
5. Crystallography - 1.8 A resolution

* PLA is the Peoples' Liberation Army - the Chinese Army.

6. Low Temperature
   Design and manufacture of liq. He plants
   Superconductivity (AC losses, Josephson effect)
7. High Pressure - 35 Kilobars - 100 kilobars
   Presses designed and built here.
   Artificial diamonds made here by hydrostatic method - dynamic methods explored in cooperation with local firms.
8. Acoustics
   Speech analysis
   Noise pollution
   Ultrasonics and micro acoustics
9. Solid state theory group abandoned during cultural revolution, when the theorists went into the lab to do practical things - "which is the best way".

500 scientific workers
6-700 total workers
Budget -- 5-6 million yuan last year (1 yuan is about 50 cents)

Translator is a girl physicist who speaks perfect British English -- she lived in England till she was 18. (She has a "Little Red Book" showing above the top of her shirt pocket). (Note added much later -- I saw no others.)

The level of work now is approximately where it was before the Cultural Revolution. It wasn't affected as much as in other institutes.

Professor [redacted] remembers [redacted] from his graduate student days at Yale. b6 b7C

We walked to the Crystallographic lab building and are now seeing a 3-dimensional electron density plot of the insulin molecule. (Insulin was first synthesized by Chinese chemists in Shanghai about 10 years ago.)

I've just taken pictures of crystal growing -- $LiIO_3$ from saturated solution -- for frequency doubling in laser beams. (Density 4.51)

We then visited a laser fusion lab, where a laser beam was amplified by passing through several Nd. glass cylinders that were "inverted" by surrounding Xe flash tubes. Target was LiD, with 10^{13} watts/cm^2, on a 100 x 100 μ target area. They detect neutrons, but they aren't sure what mechanism gives rise to them.

Now we're in a high temperature plasma lab. There's a D_2-filled discharge tube, with a single turn coil around it that can be pulsed to 80 KG, from a bank of capacitors charged to several hundred KV and discharged by spark gaps into the ≈ 10 cm diam. x 20 cm long copper coil. Temperature of plasma detected by "soft X-rays".

High pressure-high temperature press that makes diamonds. We are looking through a microscope at some beautifully clear artificial diamonds. Graphite + nickel catalyst + pressure + temperature → diamonds. Tetrahedral press with tungsten carbide anvils. Time to go from graphite to diamond is "tens of seconds".

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I noticed a world map on the wall. The only countries colored red are China and Alb[redacted]a. China is near the center [redacted] the map which goes from Europe on the le[redacted] to Brazil on the right. The southern border of China (with India, Nepal, etc.) seems to be the same as we draw it -- so they aren't making claims in this area.

We're now in a long discussion of the way scientific decisions are made. We were talking of the fact that each institute or university made its own lasers. I pointed out now in the U.S., so many small companies were set up to build and sell lasers -- with no decisions except those of participants, who often went broke, but who made lasers quickly available to universities, high schools and even to bricklayers, at very low cost. I asked what the cycle time for a decision to get lasers into production and distribution would be here. After much discussion in Chinese, the answer was that it all depended on the importance of the product -- there were priorities to be determined. If the project was important, it could be done rapidly and if it wasn't so important, it would take longer.

While the rest of the party went to see the Arts and Crafts museum this afternoon, I spent an hour walking over to the Gate of Heavenly Peace Square (Tien An Men Square) -- 98 acres of paved area! I took lots of pictures and in that whole hour, in a sea of humanity, I didn't see another non-Chinese face. It was the first time I've been "out on my own".

We went to the 4th of July party at the [redacted] home. b6 b7C
The Chinese built this beautiful modern residence compound with great speed -- to match [redacted] arrival. This was to the dismay of the Americans, who couldn't prepare a comparable place in Washington to receive the Chinese Liaison Office -- we don't have complete control of"the people", the way they do here.

When we arrived, [redacted] was seated next to the Chinese deputy foreign minister, Mr. Ch'ao (Chao En Lai's alter ego) whom [redacted] b6 b7C had met last year in New York. [redacted] was rocked on his heels when Mr. Ch'ao introduced himself, speaking [redacted] name and reminding him of their meeting. (It later turned out that Mr. Ch'ao had said to one of his aides, "I've seen that man -- who is he"?)

We had a nice long chat with [redacted] and as we left (our cars were late in arriving, so everyone else had gone), with [redacted] We met b6 b7C the four senators and several congressmen who arrived in Peking a few minutes before we did: Senators Magee (Wyo.), Magnusson (Wash.) -- head of delegation -- Sparkman (Ala.) and Griffin (Mich.). Congressman Maillard from San Francisco was with the party, and we had a nice chat with him -- we'd met him and his wife on a plane several years ago -- she was at the party, too, and was as I remembered, a very pretty gal.

I took a number of movies and stills at the party. After the party, we went to a famous restaurant, where we had a private room, and a marvelous dinner all by ourselves at a big round table seating all 14 of us. (The standard Chinese round table seats 8 people.) [redacted] had ordered b6 b7C 2/3 "hot" and 1/3 "not hot" dishes. We all agreed that some of the hot dishes were the hottest we'd ever experienced. I bit into one hot pepper

that had my taste buds "at saturation" for 10 minutes. I couldn't cool them off with either massive doses of beer or rice, but the rice seemed to help a bit. It was one of the nicest experiences we've had in China. [redacted] couldn't get anyone to accept a tip, so he owes us all a refund on the 10 yuan we each paid for this wonderful meal. (10 yuan ≈ $5). (So it was about $9 per couple.) b6 b7C

It now looks as though everyone is going to Manchuria.

Thursday, July 5, 1973.
Peking University

We were received by [redacted] whose picture was on the cover of Physics Today earlier this year -- taken by [redacted] last year. The university was established in 1898 (by missionaries); 17 departments and 64 faculties. May 4th movement was started here in 1919. Mao attended this university. It has been active in the revolutionary movement. b6 b7C

We have been listening for the past 15 minutes to an ideological lecture on the correct proletarian basis for education and how one has to fight against the incorrect attitudes of the revisionists. The speaker is probably the vice-chairman of the revolutionary committee of the University. We've had another explanation of how young people get into the university. Most important things are social consciousness, responsiveness to the masses, correct attitudes, and finally talent. The applicant must be sponsored by his commune and then his case is discussed by the university committees. This new method is a result of the Cultural Revolution and assures that the students are in tune with the masses.

They have the "3 in 1 combination", Education, Scientific Research and practical work in factories or communes. After the Cultural Revolution, there are now 10 workshops connected with the University, and 60 factories associated with it, in which the students work.

The ideological talk has now been going on for more than a half hour, and I am in so complete disagreement with what is being said that I don't even like to take notes on it. I see [redacted] is taking good notes, so I'll quit.

I met an old friend from University of Chicago 1932-35: [redacted] (who worked with Professor [redacted]. b6 b7C

We saw lots of quite good-looking experimental equipment -- of the kind H-P or Techtronix would make. They were making oscilloscopes in one section, for "sale", or distribution to other labs and factories. This is part of the program of doing practical work while going to the University. We also saw a semi-production works for making very pure Gallium and Arsenic, to combine into Gallium Arsenide, for use in solid state lasers. They appeared not to know that Ga As was used in large amounts in the U.S., for indicating lights on hand calculators. They apparently don't use their Ga As for LED's (light emitting diodes) but only for lasers.

We visited an English class and spent fifteen minutes talking to young girls who had been studying English for only 2 years. The girl I talked to had spent her time before being nominated to [redacted] University, working as a field hand in a commune where they raised rice. We've seen a lot of rice-growing, and it is very hard, very dirty work. She spoke well and showed me her work books in which she had written in cursive, an explanation of the mimeographed typewritten expressions.

We ended up with a long discussion over tea, concerning university education since the cultural revolution. [redacted] explained the new ways and the reasons for them, with particular emphasis on the need to avoid the elitism which the Russians have adopted since their revolution. b6 b7C

After an excellent lunch at the hotel, and a half-hour nap, the men are at a branch of the Institute of Atomic Energy, and the girls are visiting a middle school. I'm sitting in the front row of a good-sized lecture hall, filled with physicists who are listening to [redacted] talk on the "Dual Resonance Models". b6 b7C

The seats are made of wooden slats about 1½ inches wide, spaced by that same amount. So after three hours of listening to a lecture of which I've understood essentially nothing, my rear end has three parallel grooves cut into it -- I hope not permanently, but it could easily be so. I just said to [redacted] certainly must pay our wages for today". [redacted] told us he thought we were going on a vacation trip so that the lab needn't pay us our salary when we were away.) b6 b7C

After an early dinner, we went to the Peking Opera, to see "On the Docks". This has lots of good guys, but two bad guys. One bad buy was the head of the docking company before the liberation, but now is an ordinary stevedore. The other is a fellow with a college education, who feels that it is beneath his dignity to do such manual labor. They sabotage a sack of rice that was to be shipped to Africa, where it is needed as seed for a starving populace. One bad guy makes a cut in the sack, that lets rice drip out on the dock. The old man, Mr. Chen, stuffs ground glass into the hole, to contaminate the rice, so the rice will disgrace China on the world market. They are found out, and Mr. Chen tries to escape by swimming away-he is caught and killed. The young man is shown the error of his ways, and reforms by accepting a little red book of Mao's quotations. There is a time element of concern in that a typhoon is on its way, which will keep the rice from being shipped. One of the bad guys reroutes the grain to Sweden, where it isn't needed. Everything turns out O.K. in the end, and the young man's conversion to the joys of socialism is the climax of the show. I got a lot of movies of the show, which I hope came out O.K.

Friday, July 6, 1973

This morning we are visiting the Institute of Atomic Energy -- 3/4 hour southwest of Peking. Just after crossing the Marco Polo bridge, we started to see signs saying "Area forbidden to foreigners". (One almost never sees English words or any non-Chinese characters displayed

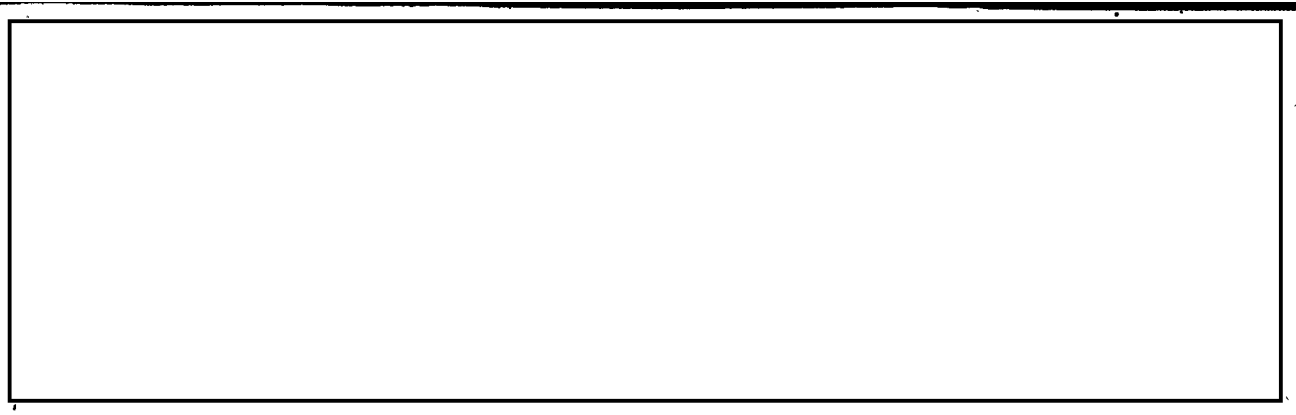
on signs -- even on street signs. In Peking there are sometimes Pin-Yin transliterations of the street names, under the Chinese characters).

(Note added later). I should say a few words about the need for a Chinese alphabet. The missionaries introduced several ways of transliterating Chinese into Latin letters, each based on the speech patterns of French, German or English. The common English system is called Wade-Giles, and it is the one used by almost all English writers. (It is a really stupidly constructed system, and Messrs. Wade and Giles should have been ashamed of themsleves!) I studied Wade-Giles for several weeks, and the transliterations I've set down in this diary follow moderately well that system. To do an effective job of writing Chinese in English letters, one must also set down the "tone" of each syllable -- there is one syllable per written Chinese character. There are four tones: 1st, level pitch; 2nd, rising pitch; 3rd, "dipsy doodle" -- down and then up; and 4th, falling pitch. A change in tone can completely change the meaning of a syllable. (I remember the tones by this "skyline": ⌒/∪\.) For example, Peking is written Pei^{3}king^{4}, so one says "Bay", with the voice frequency going down and back up, followed by "Jing", with the frequency falling. (This word was the only one I recognized on the Chinese radio. King means capital, and Pei means north. So Peiking is the northern capital, as contrasted to Nanking, the southern capital. When I described the orientation of the Egyptian pyramids, I heard the interpreter say "Bay" and "Nahn", for north and south. I never caught any other words.)

There is obviously a need for a standardized conversion of Chinese characters into latin letters, as one can understand by trying to imagine how he would set up a filing system, construct a dictionary, or communicate with a computer. Chinese students work for years to learn the 1500 to 2000 characters needed to read a newspaper. It is said that blind children learn to read much earlier than sighted ones, because they learn a phonetic Braille. The Chinese writing system is a real albatross around Chinese necks, and something is finally being done about it. The missionary-inspired systems have been rejected by the Chinese government, and an alternative system, Pin-Yin, has been devised and adopted officially. It is much easier to read than Wade-Giles, but one has to relearn the names of all cities and other geographical places, plus historical characters and periods. Nagel's comprehensive guide to China is the first book I've seen that has converted completely to Pin-Yin. Street signs are beginning to be written in both characters and Pin-Yin, and in Manchuria, the names of most places of business were also shown in Pin-Yin. As China moves into the twentieth century, Pin-Yin will certainly assume greater importance, and it should eventually replace the characters. We are handicapped by being the only industrial nation that still uses the English rather than the metric system. But that handicap -- which we are slowly correcting -- is minor compared to that which hobbles the 800 million Chinese people.

I was impressed by the speed with which the Academy of Sciences typed our revised schedule, both in Chinese characters and in English. I inquired of [redacted] how the typewriter worked, but he couldn't explain it. b6 b7C He offered to take me to see it sometime, but the occasion never materialized. It was obvious that the machine wasn't a photo-optical device, because it cut a mimeograph stencil. I hope to learn sometime how it works.

We're looking at the Van de Graaff and it also isn't working and no pumps are going.



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Referral/Consult

We're now visiting a neighborhood committee near the Imperial Palace. We're sitting at a long table, sipping tea and introducing ourselves to the five members of the committee. They will then introduce themselves and tell us of their activities. The speaker is the "Leading member of the revolutionary committee of the neighborhood committee". Woman is the "director of administration of the neighborhood group". Visitor is from the foreign affairs committee of the Peking revolutionary committee. Neighborhood committee is under the revolutionary committee of Western Peking. 1.5 square km. is the area of the "neighborhood". People in all kinds of work -- altogether 14,136 families 52,980 people -- workers, cadres, doctors, artisans, etc., etc. 22,080 are working -- others are housewives and children. 16,260 in school -- primary and middle school. 6,146 pre-school age children. 7,762 not engaged in work -- aged and weak and housewives. (I didn't get number of factories,unions, cleaning works, nurseries, etc.) 7 small factories founded in 1958, during Great Leap Forward. Used to produce only parts for other factories, but now, through the teachings of Chairman Mao, they are self-reliant and can make more and larger things and they've grown larger and have more workers. 4 kindergartens and nurseries -- combined with each other to permit housewives to work and make great leap forward. Formerly each factory had own nursery -- now they are for the whole neighborhood. "Service station" takes care of "everything for the housewives" -- more than 100 services. Such as washing clothes, mending clothes, fixing radios, etc., etc. Small hospital (clinic) run by Committee -- for out-patient care. Combines western medicine plus traditional Chinese medicine. There are 25 neighborhood groups under the neighborhood committee -- the masses organize themselves into these groups. Neighborhood groups are organized by "Lanes" within the neighborhood, with officers chosen by the masses. Their job is to read newspapers and study Marxism, Leninism and Mao thoughts. Organized to help the people help themselves -- people going to work give their keys to older people, who clean the workers' homes and help make meals. Then when workers come home, they help the older people with heavy work the older people can't manage. 3rd task is to help with medical care -- prevention of diseases that come with the seasons. 4th task for the neighborhood committee is to make silk flowers, etc., to decorate homes of neighbors. 5th task is to send representative to shops and factories to give their suggestions to improve things -- same thing relative to schools. Other tasks -- e.g. if snowing -- to clean streets. Any questions? [redacted] suggests we postpone questions till we've seen some of the lanes in the neighborhood. (Material above from woman with very harsh voice).

b6
b7C

We've just had a long discussion of hospital charges. Our interpreter said that most of the people in this neighborhood pay only half of the "normal" hospital charges. [redacted] asked, "Who pays the normal charges?" The answer was that very few people did, because almost everyone either works, is old, or is a dependent of such a person, and therefore gets the "half rate". The discussion went further about who, then, pays the regular rate. The final answer was that no one pays the full rate -- everyone gets hospital care at half price!!! (or less!) b6 b7C

We've now visited four or five homes of workers in this neighborhood lane. Some houses were very old (70-80 years) and single floored, with 4 or 5 rooms. The first one had its kitchen in the next building, with other kitchens, probably to keep odors out of the living quarters. The stoves are very small and low, and are heated by pressed bricketts of coal -- cylinders about 6" in diameter and 4" high, pierced with a dozen holes parallel to the axis, about 3/4" in diameter, to let air and flame through. (I had seen these being pushed on heavily loaded carts by men that would have been called coolies before the liberation.).

We visited a small "lane medical center" -- a few rooms with a medical smell about it. A question was asked about family planning, and two large bottles of birth control pills appeared out of nowhere.

We are now back in the discussion hall where we met for tea and the presentations by the heads of the neighborhood committees. Our group is asking questions and the committee officers are answering.

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After dinner as a group in a private dining room at a restaurant about a mile from the hotel, we decided to go to Tien An Men Square and throw frisbees. We picked up 3 other Americans, one of Chinese ancestry, who works for IBM and very quickly collected a crowd of several hundred interested spectators. We encouraged them to throw the frisbee whenever it went into the crowd, so the perimeter of our throwing area slowly decreased as everyone tried to get in a better position to catch one of our "foul balls". There was a lot of friendly feeling between the Americans and the Chinese crowd. We applauded every time one of the Chinese got off a good throw, and every time someone threw the frisbee in a wide curve -- which is often for an unpracticed thrower -- someone would dash off to retrieve the frisbee, so he could try throwing it. We were in the square for about three-quarters of an hour, and everyone worked up a good sweat in the hot and muggy weather. We all felt we had had a wonderful and most unusual experience.

Saturday, July 7, 1973.

Visit to Tsing Hua University ("The MIT of China").

We are in the usual tea ceremony. The man doing all the talking [redacted] is the vice-chairman of the revolutionary committee, and professor of mechanical engineering. b6 b7C

Professor [redacted] Professor of Mechanics has recently visited Berkeley. (I showed him how to scan bubble chamber film). For the first time in one of these introductory meetings, there are students present -- two girls. Another girl is an instructor in English.

[redacted] passed around his usual sheet of paper for everyone to sign his name and fie[redacted] of interest. I saw that two [redacted] the men wouldn't sign -- they passed the sheet, with all other names on it back to [redacted] He passed it back and made signs for them to write. They studied it for some time, and consulted the foreign secretary of the University, who didn't sign. One of the others finally did sign, but the other didn't. I'd like to have understood what was going on. b6 b7C

We're now hearing the standard explanation of the way of picking students for the University, after their recommendations "by the masses". Also what an improvement it now is on the way it was done before the Cultural Revolution.

Someone told me that he had 4 children. The first 3 went to the University, but the Cultural Revolution came along before the youngest one could enroll. She wasn't recommended by "the masses", so she is now working in a factory, and will probably continue to do so.

The university has its own farm, where students can do their manual work. Girls are 21 °/o in one class and 31 °/o in another. Before liberation it was less than 1 °/o. Before the Cultural Revolution girls comprised about 18 °/o.

On the drive out to Tsing Hua University, someone asked [redacted] our very good interpreter from the foreign office of the Academy what his salary was. He said 60 yuan, and his wife, who teaches in a middle school, gets 45 yuan per month. (1 yuan ~ 50 cents). He wasn't with us yesterday when we visited the neighborhood and talked with the factory workers who said that they got 100 yuan and their husbands got 100 yuan per month. [redacted] has a very responsible job and visited the U.S. with the first delegation. This conflict in numbers confirms my feeling that we were not given straight answers to our questions yesterday. For example, someone asked if the people in this neighborhood had many foreigners visiting their homes. They said it was a rare experience. My feeling was that we saw a "typical worker's home" in the same sense that bubble chamber physicists always identify the bubble chamber pictures they show at physics meetings as "typical pictures". In our business a "typical picture" means the best we've ever seen. We recognize this as a universally understood in-joke. [redacted] walked back to the hotel through a mile of back steets, and confirms that the neighborhood we saw is in this sense, "typical". b6 b7C

Yesterday at lunch, I sat with the girls, who had just ordered a Western lunch, with chicken salad and fruit. I wanted to hear [redacted] experiences at the nursery school, so I sat next to her, but I was torn by the thought that I wouldn't get one of the fine Chinese meals we've gotten used to. I ate my chicken salad and fruit with chop sticks, because it seemed easier, even though I was provided with fork and knife. And I went to the table where the men were sitting, with my plate and chop sticks, to supplement my Western meal with some "real food". b6 b7C

At Tsing Hua University, we've just visited a number of small scale "electronics factories" where they are building nice looking high speed counters (to 100 MC) with Nixie tube readout. We also saw the production and test of integrated circuits -- memory chips to store 16 bits. They had a laser interferometer-controlled "step and repeat camera", for making masks to make integrated circuits.

The machine shop had nice looking lathes and shapers, but we were all shocked to see that only one person -- out of perhaps 50 -- wore glasses and no doubt to correct her vision. In the U.S. one can't even go into a machine shop area without putting on safety glasses. There seems to be very little attention to "Industrial Safety" in China. When we visited the textile mill, we walked between machines that had rapidly moving parts very close to us as we went by. None of the workers wore glasses and there were no safety barriers to keep hands and heads out of the path of rapidly moving parts.

[redacted] and I rode from the main building to the various other buildings in the back seat with the student leader between us. She had spent 2 years at a commune in Manchuria, where she worked in the rice fields, and also hunted wild animals. It was a pleasure to see some practice of all the talk about student participation and criticism. b6 b7C

We're now back in the reception room, and the girl is telling us what she studies in her course in computer technology.

Examinations are "open book". Students can look in books, and discuss the problems not only with the teacher but also with other students. I said I believe this corresponds with reality -- physicists solve real problems this way. Grades are given on a 100 point basis. If a student gets poor grades, he is helped -- there are no failures.

Salaries of professors go up to 350 yuan per month, which is about tops in China for any profession. Top salaried professions are "first ranked professors", doctors, engineers and actors. Government ministers don't make this much.

One hour each week, there is a session in which students comment on the effectiveness of the teachers. This is new since the Cultural Revolution.

Visit to Agricultural Peoples' Commune Southeast of Peking.

We're in the tea ceremony room, listening to the vice-chairman of the revolutionary committee of the commune. Its name is the "Double Bridge Sino-Cuban Friendship Peoples' Commune". 39,000 members of this commune. 90 sq. kilometers. Organization divided into 3 levels, 6 productive brigades. Under these 6 productive brigades 39 productive teams. Commune set up in 1959. Main output is wheat - rice - vegetables. Also maize and cotton. In forestry, we planted lots of trees and have many orchards. Grapes, apples and peaches. Animal husbandry -- 3 dairies for milk cows, 4 pig areas, 1 place for Peking duck. Factory for agricultural insecticides. Flour mill - repair shop for farm tools - small ponds for fisheries. This area formerly suffered from drought and flood, but its level has been raised to avoid these disasters. Productivity increased 8 times since liberation -crop weight per acre. Formerly only produced grain, but now -- see above. 10,000 kg of milk per day from 800 cows. 1,000,000 kg of fruit to Peking last year and 10,000 pigs supplied to Peking. 46,000 Peking ducks last year. 30,000 kg of fresh

fish per year. Self-sufficient in insecticides, with a bit left over for rest of country. 6 middle schools and 8 primary schools. Pre-liberation - no middle schools in this area. All children of school age get an education. General hospital in the commune and in each productive brigade, there is a clinic and so on for the next level of organization. Now carrying out cooperative medical system. Each member pays 1 yuan per year and then gets full medical care. Two old age homes for old people.

"Work is just started -- not done well -- we don't have enough machines -- too much work done by hand -- just started to use scientific methods -- starting to go ahead -- in our construction of socialism, we want to learn from our American friends, so we are glad to welcome you here". (No mention of Chairman Mao).

46 villages in the commune. The commune members live for the most part in their original homes in the villages.

So far, we haven't met any chairmen of anything, but lots of vice-chairmen. My guess is that the title "Chairman" is restricted to Chairman Mao. It is probably like the situation at the University of Illinois, where Red Grange's number, 77, was retired when Red Grange graduated. No one could aspire to wear that number after Red Grange had worn it. (My theory. I've asked [redacted] if there are any chairmen, and he says "Yes", but we've now been here for a week and we haven't met any, although we've met countless vice-chairmen). b6 b7C

We visited the homes of several commune workers -- had tea and talked about salaries, rents, food costs, and "work points". One gal had a small child and said she only worked in the fields when she felt like it. At first it seemed that she said her wages didn't depend on whether she worked or not, but it later became clear that it was her rate of pay that didn't depend on how much she worked. She got paid a certain amount for each "work point" she accumulated, and normally, she and her husband made 80 yuan per month. They had built their own home and owned it (and could sell it in the very unlikely event that they ever left this commune). The land was still owned by the commune.

We saw the Peking duck "factory", from the hatching of the eggs to the raising of the baby ducklings to the 45 day old ducks that are then force-fed to produce the flavor that makes Peking Duck so tasty. Although ducks normally eat grain, these ducks are force fed with grain plus ground up young bulls. The commune has a large dairy herd, which we saw, plus a half dozen breeding bulls, which have a chain running through their noses, with its other end over a long wire rope -- much like a dog-run.

We watched the ducks being force fed by a machine. The operator grabbed a duck, opened its mouth, pushed it around a rubber nozzle, and pulled a lever which forced a measured ration down the duck's neck and into its stomach. It was a revolting sight to watch the duck's neck and stomach be distended as the lever was pulled.

We finally stopped so we could photograph some peasants transplanting rice shoots in a flooded paddy. I had to make a big deal about this stop, because we had always sped by places where we could have photographed this important operation -- a large fraction of all the workers in Eastern and Southeastern Asia spend their time this way. I finally had to tell [redacted] that I couldn't show a movie of China without including a shot of men working in a rice field. b6 b7C

When we returned to the administrative offices of the commune, I had to go to the men's room. [redacted] apologized because the regular one was being fixed, but got someone to take me to another at the far end of the commune area. (This is like the hill town in Italy where [redacted] lives -- there are two public bathrooms in the town of 1500 people, and one in a private house.) This trip to the distant toilet was most important to me because it carried me far away from the beaten track taken by the usual foreign visitor. I had been, with [redacted] a confirmed skeptic about the reality of what had been shown in the last two afternoons, purporting to be the way the common people lived. The whole thing seemed to resemble Potemkin Villages, and I just couldn't believe that a retired working lady of age 50, plus her husband, who still worked, could take home 200 yuan, when [redacted] and his wife only earn 105 yuan per month. But the houses I saw in the back reaches of the commune were remarkably similar to the "typical ones" we'd been shown with such fanfare. Their furnishings were very similar and they had similar posters on their walls. I told all members of the group that according to Chairman Mao's teachings, I should criticize myself for my doubts, and admit that I might have been very wrong. b6 b7C

I didn't go into the meeting room for the final round of questions, but started a frisbee throwing contest on the main street. In no time at all, there was a big crowd assembled, and we encouraged the spectators to join in. Many did, and one member of the commune quickly became an accomplished frisbee player. When [redacted] emerged with the vice-chairman, we persuaded him to present the frisbee to the new expert. There was obvious approval of this gesture, and we left with lots of applause from them and from us. b6 b7C

After dinner, [redacted] and I walked up to the Gate of Heavenly Peace, and walked through the gate into the Imperial Palace. When we emerged, the frisbee team was busy showing their skills, surrounded by several hundred excited spectators, as of last night. Lots of fun.

We've now loaded our bags with what we hope will be enough film for our trip to the Great Wall and the Ming Tombs tomorrow. And so to bed.

Sunday, July 8, 1973

We drove out to the Great Wall, but it was quite foggy and we could barely see from one tower to the next. We climbed up to the highest point in the area -- it was exceedingly steep, and a good long climb. I will try to borrow Glenn Seaborg's movies of the Great Wall, taken from all the places we climbed to; I should be able to get a copy which I can splice into my film. We had lunch near the Ming Tombs. (Ming Dynasty: 1368-1644 AD). The structures above the ground have been known since that time, but only since the liberation has one of the subterranean tombs been opened. (The positions of the entrances weren't known). The tombs consist of an array of wide, high tunnels, faced with dressed stone. The overall length is 87 meters, and there are several side tunnels. The treasures have mainly been removed to museums, one of which is on the site, and which we visited. There are still many tombs to open, and no doubt they will be opened in the future. There is an impressive avenue lined

"cemetery", to the opened tomb and the nearby pagodas.

Our interpreter was first called [redacted] by [redacted], then progressed to [redacted] and I now call him [redacted] which is the familiar [redacted] b6 b7C In return, he is now calling me Luie, just as he calls [redacted] by his first name. This is very "un-Chinese" but [redacted] wants to become Americanized as much as he can, because so much of his time in the future will be spent in the company of Americans.

[redacted] and his wife went on the trip with us, and he told us many interesting things about his country. For example, China did not exact any reparations from Japan, because they felt this would be a burden on the Japanese people, and they don't want to be a party to the exploitation of any people. This made their recent rapprochement with the Japanese very easy -- it only took a few days from the first visit by the Japanese premier. They also won't fly their planes to Japan as long as planes from Taiwan land in Japan. This is apparently what is holding up the inauguration of the Tokyo-Shanghai air service, which we had been told would start last spring. [redacted] didn't say that Japan Airlines couldn't land in Shanghai because of their relationship with Taiwan, but it is a fact that "things are moving slowly" in getting air transport between the two countries started. b6 b7C

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We are going to the Great Hall of the People, for a banquet in our honor, hosted by Kuo Mo-Jo (pronounced Go Mo Ro), President of the Chinese Academy of Sciences and a world famous scholar of ancient Chinese, as well as a renowned caligrapher. (We saw, in the Hangchow airport, a large scroll on the wall, in his hand, of one of Chairman Mao's poems.)

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I had some ideas for the editing of my film, on the way home from the Wall, and I'll outline them briefly. [redacted] thought they were excellent.) I propose to show our entry to China, from the "New Territories", and then cut to the people at work in the rice paddies and on the commune and in the Peking neighborhood. I'll say that we are now in the Chinese Peoples' Republic, and that isn't just a catchy name -- the country really belongs to the common people -- the masses --and one is seldom able to forget that fact. The Russian revolution bred an elitist class, with enormous privileges and no contact with the masses they are supposed to represent. The peasants in Russia feel they have simply exchanged one set of elitist rulers for the ones they disposed of when the Czar's family was shot. Chairman Mao is keenly aware that this could happen in China if extraordinary steps weren't taken. In fact, the Cultural Revolution, which engulfed China from 1966 to 1970 was, as I see it, an elimination of such elitism, which was alienating the masses from their government. Mao encouraged the Red Guards to shut down all universities for this four year period, and to re-reducate the faculties in his revolutionary principles. It is now so, as I've noted earlier, that entrance to the universities is not under the control of the faculties, but of the masses -- in the form of voting by each commune on the attitudes of members of their commune, who want to go to the university. No one can now go directly from middle school to university, but must spend two years doing manual labor in a rice paddy or factory. Only if his fellow workers decide that he should go to university can he do so. This will surely (in my opinion) lower the quality of basic science in China, but I am convinced that such loss of scientific excellence is a small price to pay to "keep faith with the masses", without which b6 b7C

and its economy is booming from the manufacture of high-technology products. Japan would seem to be a fine model for China to emulate.) Until I visited China, I felt that the Cultural Revolution was a sign that the ruling class in China was out of its mind --to stop all higher education for four years -- but I now believe they had to do it to keep the momentum of their fantastic development going. Mao says there may be three Cultural Revolutions per century, and I believe it. As soon as the bureaucrats and their children improve their status to the point that they are content with the new life style, they can lose their zeal to improve the life of the masses. So the Cultural Revolution is (in my opinion) designed to see that the bureaucrats don't develop into a "snotty class" who think they're too good to get manure on their shoes all day. The university professors now do manual labor -- they teach students who have spent lots of time on menial tasks -- and they seem to believe genuinely what they tell us in the sessions we've had with them -- that they are where they are to serve the masses and help their country. The only thing in my experience to which I can compare this is the Second World War, when about all educated men enlisted to do the dirtiest kind of work -- to fight in the jungles of the South Pacific, New Guinea, to land on the beaches of France -- because of intense feelings of patriotism. That is what motivates the Chinese today, and will continue to do so, as long as Cultural Revolutions come along to "repurify the people". (At least that is what I think today.)

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We've just come home from the banquet in the Great Hall of the People. [redacted] has bought a bottle of brandy and we will all have night caps in "Chairman [redacted]" room. b6 b7C

Monday, July 9, 1973.

Last night, we were guests of honor at a very elegant banquet held in one of the smaller dining rooms in the enormous Hall of the People. The largest dining room, where Chao En Lai hosted the party for President Nixon that was seen on U.S. television, seats 5000. On the Chinese day of liberation -- October 1 -- Chairman Mao gives a large banquet in this room to which are invited people from all levels of society, from the highest officials to the lowliest workers in the rice paddies. In addition to the dining rooms, there is a huge auditorium that seats more than 6000, on a main floor plus two balconies. The whole building was built in 10 months, which is most surprising. We consider ourselves most fortunate to have been allowed not only to be received in it and to dine in it, but also to have been given a tour of its many foyers and reception rooms.

We were driven the few blocks from our hotel to the Great Hall in our usual procession of cars, and were immediately ushered into a reception room where we found all the top scientists of China lined up according to their protocol rank. First was [redacted] the president of the powerful academy, and our host; then [redacted] the vice-president of the academy; then [redacted] director of the Science and Technology Association. (We were originally invited by the Academy, but when we arrived, we found that our invitation had been changed so that our official hosts are now the Science and Tech. Association. [redacted] and his wife accompanied us to the Great Wall and the Ming Tombs.) After these gentlemen, we found in line all of the heads of institutes and university presidents we'd met in the past week. [redacted] to whom we had brought the Hewlett-Packard model 45 b6 b7C

hand-held calculator [redacted] just returned from the trip [redacted] the U.S. and Europe, of which he had been "head of the delegation". We expressed our pleasure at seeing him in China for the first time.

We sat in the usual horseshoe-shaped arrangement of specially comfortable easy chairs, with Kuo-Mo-Jo and [redacted] in the center, and mostly Chinese dignitaries on the left (front row) and American scientists on the right. There were 3 rows of chairs, with scientists and their wives in the first two, and staff and interpreters in the back row. [redacted] was quite nervous as he sat behind and between [redacted] and Kuo, because he had never interpreted for such a high official. Kuo is over eighty, and a very distinguished Chinese scholar, who also holds an important political post in the government -- Vice-chairman of the Standing Committee of the National Peoples' Congress. We talked [redacted] and Kuo) pleasantries for ten minutes and then [redacted] made his presentation of the gyroscope to Kuo, and I made the presentation of the HP-45 "to the Institute of Atomic Energy and to [redacted] (It has [redacted] engraved on it, but we felt it was better to present it to the Institute, rather than just to [redacted]) [redacted] had visited the Hewlett-Packard plant in Palo Alto; he was obviously pleased with the gift. [redacted] the Berkeley seismologist who has been in on several of our social events said that his counterpart in China was visibly envious, and said he hoped to be able to use the calculator. [redacted] had a model 35 with him, which his colleague had learned to use. [redacted] would have liked to leave it with him, but he didn't feel he could be that much of a philanthropist on his own -- he'd have to buy a new one when he returned to Berkeley.

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After the tea and the presentation ceremonies, we all moved into the banquet hall, where there were three round tables set up. [redacted] sat next to Kuo, with [redacted] on Kuo's left, and [redacted] and I sat next to [redacted] directly across from our host. [redacted] had worked with [redacted] at the University of Chicago in the early days of the Compton Effect -- when most physicists didn't believe it -- so we had much to talk about. We had our plates loaded with all kinds of strange things by our hosts, and I was proud that I ate everything, including two old black eggs, and several sea cucumbers, which look, feel and taste as though they were sea slugs. [redacted] is a Chinese cooking gourmet, but he can just barely make it with sea slugs. I ate all three of these very slippery objects, which are a bit tricky to hold with one's chopsticks. We ended with Lichis -- we know them as dried Lichi-nuts -- they come from Canton and when they are fresh, their insides are quite sweet and have the slipperiness of a peeled grape -- with a pit about 1 centimeter in diameter, which one doesn't eat. No -- there was ice cream after the Lichis -- vanilla and chocolate.

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There were several informal toasts in Mao Tai, and two formal toasts, which Kuo and [redacted] each read from a prepared text, to help [redacted] -- he had made the translations before the banquet, and read each of them. After Kuo's formal toast, he walked full circle around our table, clinking glasses with each person in turn, and then did the same at the other two tables. (We saw Chao En-Lai and President Nixon do this on television -- it is a very nice custom.) [redacted] made the same three circuits after his formal toast, which I wouldn't have thought to do had I been chairman of our delegation. The man on my left didn't speak any English, so all he said

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to me was Kam Pei (Bottoms Up.) So I clinked glasses with him, drained my full Mao Tai glass and turned it upsidedown, to show that no drops fell out. That was my only Kam Pei (pronounced Gomb Bay); [redacted] sat next to a Mao Tai enthusiast and did five Kam Pei's! (I don't know how he walked out of the banquet room after that performance.) b6 b7C

After the banquet, we had the full tour of the very impressive building, and I had my picture taken on the stage, under the picture of Chairman Mao. Our guide showed us through a number of reception rooms, in one of which Chou En-Lai met with Glenn Seaborg last month. When I dropped into Glenn's office just before leaving Berkeley, his secretary showed me a picture of Chou shaking hands with Glenn, with [redacted] in the background. Glenn said this visit had been the high point of their trip. b6 b7C

I've commented on the fantastic honesty of the Chinese -- there are no precautions to keep anyone out of our hotel room. All keys are either left in the door, or on a rack that sits directly across from the elevators, where anyone can pick off any key. There is no one on constant duty on this floor, but the elevator girls punch "6" as soon as we get in the car. So there is some awareness of who is on our floor, but not in enough detail to insure that things couldn't be stolen if anyone was of a mind to do so. [redacted] watched a street merchant "close up shop" before going home for the night. He had a pile of apples on the street, which he was selling to passersby. Just before going home, he simply covered the pile of apples with a cloth, and walked off. No one would dream of picking up an apple if the man wasn't there to pay. The only sign that people do lock things up is that each bicycle has a lock. When a bike is parked, the owner pushes two "half rings" down around the rear tire, and between the spokes. Since all the bikes seem to be identical, and all black, such locks make sense, because it would be easy to mistake someone else's bike for one's own, in a parking lot holding tens of thousands of such bikes. b6 b7C

We haven't seen our passports since we gave them up at the border, 10 days and 1000 miles ago.

Last night at the banquet, Kuo Mo-Jo told me that he was interested in the color prints (8" x 10") of the Crab Nebula that I had given to several of the Universities and Institutes we've visited. I was surprised that such a thing would have been brought to his attention. [redacted] the head of the Tech-Photo department at Berkeley made 20 copies for me of the color print I had bought from the Cal Tech book store. (It was taken on the 100 inch Mt. Wilson telescope.) At my suggestion, he had lettered in, in $\frac{1}{4}$" high characters, this inscription across the top, on two lines: "The Crab Nebula, remnant of the Supernova discovered by Chinese astronomers in 1054. The neutron star formed in the explosion is the first known optical and X-ray pulsar". Each time, in making my presentation speech I've said that this picture hangs on the wall of my study, over my desk, and I think it is the most interesting object in the sky, containing most of the physics we know; synchrotron light, H-alpha light, X-rays, gamma rays, matter at nuclear density, an accelerator of cosmic rays, etc. I point out how the Chinese astronomers not only discovered it long ago, but also recorded its light curve so accurately that it agrees with light curves we now see of supernova in distant galaxies. I also note that although it was equally visible to observers in the Western World, b6 b7C

no one bothered to mention of it. [redacted] added that in Indian caves, dated about a thousand years old by radio-carbon dating, there are pictures -- in Arizona and in New Mexico -- of a bright star near a moon with the correct phase it would have had at the moment of greatest brilliance, just after the supernova blew up.) I add that the supernova occurred on July 4, 1054 -- July 4 is our national day of liberation. President Kuo mentioned July 4 when he spoke to me, which indicates he was well briefed -- there is no mention of July 4 on the inscription. on the color print. To complete my description of the print, I should add that I pasted on it, below the nebula, a trace from the 120-inch Lick Observatory telescope, of the pulsar lights vs. time curve that I watched being taken at Lick, just a few nights after the optical pulsar had first been observed in Arizona. The neutron star, which weighs perhaps one third as much as the sun, is about six miles in diameter (it is really a very large nucleus, with a density a million million times that of water), and rotates on its axis 30 times per second.

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I've been writing and resting this morning, and [redacted] just came in from the ladies' visit to the maternity hospital. I hadn't gone, because it didn't sound very interesting, but I missed seeing a Caesarian operation under acupuncture analgesia. [redacted] was embarrassed to have passed out cold as they cut into the patient's abdomen, so all she saw was the baby being washed up after the delivery. I hope the men get a chance to see an operation under acupuncture -- one feels he hasn't really been to China unless he sees this modern miracle. [redacted] thinks we will see one in Shanghai. (Acupuncture is the traditional Chinese cure for all ailments; but acupuncture analgesia for the suppression of pain during operations is a new development since liberation, and involves either mechanical vibration of the needles, or more commonly, electrical pulses from an audio oscillator, connected to the needles.

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[redacted] woke up at the end of the operation with a needle stuck through the skin above her lip, and with the doctor pressing on the proper "pressure point" at the base of her thumb, near where it joins the first finger. The doctor said the needle was inserted in the traditional place for treatment of the kind of shock [redacted] had experienced. She's now resting in bed and I'll bring her some milk and rice when I come up from lunch.

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I've been reading Edgar Snow's "Red China Today", and I find it the best and most objective book I've seen on the subject. I'm sorry to say that I always thought of Edgar Snow as an apologist for Red China, and when I mentioned this to [redacted] and [redacted] they said they had felt the same way. We all agree, now that we've read fairly far through the book, that he is a fine reporter, who often points out mistakes that Mao and others in the government have made, and speaks very objectively as an American about how bad many things still are, while praising the fine things the Communists have done in bettering the lot of the peasants and building up the industrial base with great speed. He has contempt for the "Great Leap Forward", for the backyard iron smelters, etc. But his longtime friendship with Mao -- dating back to Snow's days as a reporter who knew Chinese and took down Mao's only "autobiography," was enough to smear him in the eyes of most Americans, including such obvious longtime liberals as [redacted] and [redacted] I had thought that I could spot [redacted] pro-Chiang Kai-Shek bias, by

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reading Time and Newsweek each week, but I (and [redacted] and [redacted]) slipped up with respect to Edgar Snow. I don't detect any pro-Communism in his book -- it is the work of a fine reporter who happens to have been an "old China hand", and way ahead of his countrymen in understanding what was going on in China. It is the old story that the Emperor cuts off the head of the messenger who brings bad news from the front lines! Most of the old China hands in the State Department suffered this fate, but fortunately a number of them are still living to see themselves vindicated for their skill in reporting what was happening in China during and after World War II. Unfortunately, Edgar Snow died knowing that most Americans thought of him as a Communist sympathizer. My guess is that "Red China Today" had a real impact on Henry Kissinger, and through him on President Nixon. And of course none of us in our party would be here today if Kissinger and the President hadn't made their trips last year. b6 b7C

[redacted]and I went walking after dinner tonight and bought several Chinese books on optics, etc., 10 periodic charts of the elements, in English and Chinese, and some colored posters depicting scenes from the Peking operas. We saw people reading the newspaper, the "People's Daily" with our group picture -- taken with Kuo Mo-Jo on the back page. b6 b7C

Now it's time to think about my talk on the pyramids tomorrow morning, early.

Tuesday, July 10, 1973

I'm ready to leave for my lecture on the pyramids.--There were about 250 in the audience, including [redacted] the vice-president of the Academy -- I sat next to him at the banquet. It is very easy to get used to talking through an interpreter; one has lots of time to think what he is going to say next. [redacted] took a couple of black and white Polaroid shots of me giving the talk, which will be nice for the record. b6 b7C

I'm now sitting in the audience listening to [redacted] talk on the subject of Education and Science Policy in the U.S. He has just said that before the war, there were about 2500 physicists with Ph.D.'s. The interpreter apparently translated this as 2000; and [redacted] corrected his translation, to the delight of the audience as well as of [redacted] who is now "one up", having demonstrated his knowledge of Chinese before a large audience. (I believe he has been studying it for the past two months, and he seems able to communicate with the waiters and waitresses at the hotel.) b6 b7C

Wednesday, July 11, 19[redacted]

We had a birthday party for [redacted] last night. We had the interpreters and [redacted] for cocktails in the 6th floor meeting room, and then a banquet in a private dining room on the ground floor. My enjoyment of a Chinese banquet is enormously increased if I have control of what goes on my plate -- normally that control is exercised by enthusiastic hosts on either side who keep piling my plate with exotic objects for which I haven't great fondness. [redacted] got lots of simple presents from all the party, and we all sang "Happy Birthday to You". It was a most pleasant, relaxed evening. Someone had ordered a fine birthday cake for [redacted] and after it was cut, no one picked up his piece in his fingers to eat, as we would do at home -- everyone automatically reached out with his chopsticks and picked up his piece of birthday cake, and ate it without getting his fingers sticky. Chopsticks are a really fine invention. b6 b7C

One of the most beautiful features of the Chinese landscape is that all roads, and some railroads are lined with carefully planted trees. I was first aware of them on the train trip from the border to Canton, when I saw lots of interesting things going on in the fields and in the towns; I wanted to take movies, but I was always thwarted by the constant intervention of trees. And then as we drove through Canton, there were trees on both sides of the streets -- I've just gone out to the Institute of Atomic Energy to give a lecture, and on the street going north from the main street of Peking, I counted 5 rows of trees (spaced every 10 feet along the road) on one side of the street and three similar rows on the other side. On the main road that goes through Tien An Men Square, there are five rows of trees on each side -- one between street and sidewalk, and 4 between sidewalk and Wall of the Imperial Palace(on the north side). Although some of the trees appear to be older than 24 years (from liberation), most seem to have been planted since liberation.

I was on my feet for 2½ hours, lecturing to about 150 physicists on techniques of semi-automatic bubble chamber film measurement and computer-based data analyses of nuclear events seen in the liquid hydrogen bubble chamber. [redacted] said no one knew anything about such techniques, and he encouraged me to start with first principles and develop the whole technology. So I started with Wilson Cloud Chamber techniques and brought the audience through the long series of developments pioneered in our group at Berkeley. It sounds as though I was very long winded, but a lecture that takes one hour, if given in English,takes about 2½ hours if translated into Chinese -- it takes about 50 % longer to say something in Chinese, as compared to English. b6 b7C

[redacted] invited our whole delegation to a luncheon banquet at the Peking duck restaurant. [redacted] and I sat on each side of [redacted] and [redacted] was on my other side. [redacted] and [redacted] filled my plate with goodies, as is the custom, and I'm proud to say that I ate every single thing they put on my plate. We ate the whole duck, starting with the webbed feet, liver, heart, skin, soup made from the bone marrow, probably some of the stomach, and finally the most delicious roasted duck meat I've ever tasted. After the feast, we toured the kitchens, where, as one would guess, there were no supplies other than about 30 Peking ducks ready to cook. b6 b7C

The weather was fine this morning, so I suggested to [redacted] that I'd like to visit the Great Wall this afternoon. I said that if we couldn't use one of our cars, [redacted] and I would hire a car or take a cab. [redacted] reported that [redacted] said it was impossible -- there wouldn't be any time. So I decided to cash in my "Brownie points" -- I've gone along with every suggestion made either by [redacted] or by [redacted] with never a hint of any contrary view. Almost everyone else has given either [redacted] or [redacted] fits on one occasion or another, asking for a change in plans, or for some special treatment. So on this occasion I decided to be firm -- there was plenty of time, and we had come 10,000 miles to China, and we really wanted to see the Great Wall. [redacted] immediately sensed that I was serious, and backed away from his firm stand -- it was now quite easy to arrange. So everyone but [redacted] who had been to the Wall twice, and [redacted] and [redacted] who were on a panel discussion of accelerators, drove to the Wall in a caravan of five cars. The Wall was absolutely fabulous, and a sight I'll never forget. We walked up the western side (rather than the eastern side we chose on Sunday), and had a fantastic view of perhaps five miles of the 4000 miles of the Wall, as it snaked around the mountains to the northwest of Peking. We expended our film like drunken sailors, and I hope that the pictures show our friends a bit of what so impressed us on our visit. Everyone agreed that it was one of the most marvelous sights we had ever seen. I was so obsessed with the job of taking pictures of the Wall that I neglected to photograph a beautiful, sun-lit valley to the north of the Wall. This was our only view of Inner Mongolia, and I kick myself for having a one-track mind about the Wall.

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Thursday, July 12, 1973

Last night, I had a cable telling of my mother's death. One can't be too sad when a loved one dies within a few months of 90 years of age, in full possession of her mental facilities. My mother's mother had a stroke that left her speechless for five long hard years during which time she lay on a bed and stared straight ahead, without indicating much more than her sense of great shock that the Lord would have done such a terrible thing to her, after her long years of service to Him, in the missions of China. So even though I am sad to have lost my mother, it was clear that her life had to end one of these days, and my sympathy goes to my father, who is now without companionship for the first time since they were married, sixty-six years ago. [redacted] and I sent Dad a cable after breakfast this morning. Mother was pleased that we wanted to visit Foochow, her girlhood home.

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I'm now sitting in the front row of the auditorium at the Institute of Atomic Energy, where I talked yesterday. I'll soon be on, to talk about liquid Xenon proportional chambers -- my third talk in three days.

Last night, we had a fascinating session with our Chinese colleagues, on the subject of the interactions of the scientific community in the U.S. with the military, in particular in the area of nuclear weapons, ICBM's, ABM's, and arms control. [redacted] spoke for more than an hour (with interpretation), giving a history with which all the Americans were familiar, but which some of the Chinese seemed to find new and interesting. They didn't seem to know about PSAC or DDR & E, or what roles they had played over the years. [redacted] also spoke of the positive impact of the Pugwash Conferences. After [redacted] talk we discussed the wisdom of dropping the bomb on Hiroshima, with divergent views from the

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Americans feeling that it complicates matters. [redacted] in his talk, spoke of the U.S. program as it progressed from the A-bomb to the H-bomb, controversy and decisio[redacted] to Sputnik, to ICBM's, to Po[redacted]is, to the ABM controversy, to SALT, and to the U-2 and "spy in the sky" satellites. It was a good summary, and it showed the influence of the scientific community in many instances. b6 b7C

When [redacted] was finished [redacted] gave a long talk in which he expressed his anger at the Soviets, for stationing one million men on the Chinese border. He said that the Chinese would not be deterred by nuclear weapons, but they would fight to defend their homeland. He surprised all of us by saying that he felt things would be more stable if every one of the 100 countries in the world had atomic weapons -- the nth country problem, with n = 100. He said no country would drop a bomb on one of its neighbors because it would know it would be destroyed quickly in retaliation. (No one asked him how the identity of the attacker could be determined.) [redacted] [redacted] said he didn't share [redacted] high regard for the effectiveness of the Pugwash meetings. He said he knew the Pugwash meetings from having attended four of them in the 1950's, and he knew the Russians well, from having worked with them from liberation in 1949 to the Sino-Soviet split in 1960. He didn't agree with [redacted] feeling that the U.S. delegates had persuaded the Soviet delegate scientists -- in one year -- that ABM's were "destabilizing". [redacted] said he was sure that the Soviet government had changed its position in that year, and the scientists weren't acting as individuals, but were (in our idiom) "expressing the party line". Murph had planned to suggest that the U.S. and Chinese scientists engage in some discussions of the "Pugwash type", but [redacted] negative reaction to the Pugwash concept ruled that out. b6 b7C

The session was certainly the first of its kind that has taken place between knowledgeable physicists of our two countries since the Chinese developed their nuclear weapons technology. Several of the directors of institutes associated with the Institute of Atomic Energy were present at the meeting, which was held on "neutral ground" in the Peking Hotel. (It was apparent that no one wanted to appear to be acting as host or sponsor of this session.) I was pleased to have sat in on such an historic session, that I hope will lead to deeper discussion of these issues between scientists of our two countries, and policy makers as well. (It is of course possible that President Nixon and Dr. Henry Kissinger have already had such policy discussions.)

We had a most fascinating visit to the Summer Palace of the Ching Dynasty, ending with the Dowager Empress known in China as the "Dragon Lady". (The first palace buildings on the site were built in 1153, and the Ming emperors built several pavilions. The Dowager empress spent much of her time here; one special palace she used only on her birthday. She had an outdoor opera theater built, with a large multi-storied stage building. She sat behind a screen so that the eunuchs and other members of the court couldn't see her. She also used the money appropriated for a Chinese navy to build a stationary marble boat, on which she held elaborate picnics. We climbed all over the marble boat.

We heard singing from the lake, and discovered about one hundred PLA men treading water in perfect formation, and singing stirring songs. They were too far away for me to photograph, at first, but then the

formation slowly made its way toward the shore, so I could recognize in the finder that they were men. Unfortunately, just seconds after I'd finished taking their picture, they did a quick "about face", and started paddling slowly away. It would have been a great movie shot if I could have gotten the about face.

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Back to an early dinner at the hotel, because we must be out the front door at 5:30 AM, to catch the plane for Darien, Manchuria (old Port Arthur from the days of the Russian occupation). As far as we can learn, no American visitors have been there in the past year, so it should be quite an adventure. (And with the exception of Edgar Snow, probably no Americans have been there for the past 24 years.)

We stopped on the way from the Summer Palace to the Peking Hotel, to throw Frisbees in the Tien An Men Square. [redacted] photographed me throwing a Frisbee, with the Gate of Heavenly Peace in the background. We didn't collect as large a crowd as we've done on the two evening Frisbee sessions in the square -- everyone seemed to be riding his bike from work to his home. By ordinary standards, we had a lot of spectators, but compared to the huge crowds in the evening, it wasn't so impressive. I got a lot of pictures of people riding by on their bikes, to use in the early part of my edited movie film. b6 b7C

Yesterday, as [redacted] and I rode out to see the Great Wall, I was struck by the way the driver blew his horn almost constantly for the 90 minutes it took to go each way. If the driver didn't honk his horn for 10 seconds (and he always did it at least twice for any occasion, and often 10 sharp blasts in a row), then he would honk it a couple of times at someone walking on the opposite side of the road, a block or two ahead of us. We went around every other car and bus -- often driving on the single lane used by cars coming toward us, and since our car was a Red Flag with a loud horn, oncoming cars would drive off onto the shoulder to let us have the whole roadway. I found it very annoying to have the horn blasted an average of 30 times per minute for three hours, and very embarrassing to be treating the peasants -- who own the country -- in such a cavalier fashion. I'm sure that Chairman Mao, if he knew that the drivers of Red Flag limousines were behaving in such a disrespectful way would encourage a second mini-cultural revolution to educate the drivers to have more respect for the masses. The behavior of cars and drivers is the only thing about China that reminds me of my experiences in the Soviet Union, where the elitist classes treat their peasants and workers with disdain. I haven't discussed the matter with any Chinese, because I would probably be quite critical, and I don't want to be while I'm a guest in their country. I was happy to be back in my own car today, where the honking is annoying by American standards, but mild compared to the honking by Red Flag drivers. b6 b7C

There is an enormous program underway in Peking to build air-raid shelters. Scientists at all levels have talked about them, and it was said that if we wanted to visit any of them, we would be welcomed. As one drives down any street, he sees large piles of construction materials -- semi-cylindrical pieces of cast concrete, about 6 feet in diameter, huge piles of freshly-made bricks and concrete blocks, and reinforced concrete slabs about ten feet long and six feet wide. We also see huge piles of what appear to be telephone poles, piled high in a regular array --

probably to roof over "cut and cover" tunnels. The shelters seem to be designed for protection from high explosive bombs -- as used in Viet Nam and in the Battle of Britain, and not as fall out shelters, or blast shelters for protection against nuclear weapons. The Chinese genuinely fear an attack by Russia across the Siberian border, and they expect that because of their possession of nuclear weapons, the war will be limited to the use of high explosives -- à la Viet Nam. Each University and institute has its own shelter system, built by the students and professors, and the same is true for all the neighborhood communes.

Friday, July 13, 1973

I woke up at 3:30, and couldn't get back to sleep before we had to get up at 4:30. Our bags have to be out in the hall by 5:15 -- all to make a 7:10 airplane. (We're going from Peking to Darien, Manchuria). [redacted] arrived in Peking last night, but I missed him when he came into the dining room -- I had already gone up to the room. [redacted] said he said, "Where's Luie Alvarez?" I've heard that he was instrumental in securing the invitation for me. I was all ready to call him [redacted] instead of [redacted]

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For non-physicists, I should say that [redacted] and [redacted] are two Chinese-born, naturalized Americans who shared the 1957 Nobel Prize for their work in theoretical physics. I have known them professionally for twenty years, but I got to know [redacted] well when we were for several years members of a small advisory committee to the Chief Scientist of IBM. [redacted] father is professor emeritus of mathematics, living in Shanghai, and [redacted] has visited China twice in recent years. We saw a good deal of his sister, who is a physiologist in Shanghai. She looks unusual for a Chinese girl because she has wavy hair. We also saw [redacted] son, who has been learning Chinese at Yale. He was most proud of the fact that he was ejected from a Friendship Store -- he had really "passed" as a native Chinese.

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Last night, we received gift packages from our hosts. There was a beautiful scroll to hang on the wall, with a picture of a wild horse. We also received individual seals ("Chops" as they used to be called), for signing documents. Each seal has the characters representing our names, in a square pattern. Mine has the five characters representing the five (!) syllables in Alvarez, and [redacted] has some extra characters, identifying her as my wife. The seal kit also contains the India ink with which to wet the seal before using it.

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We had breakfast in the Peking airport, and then flew in an Autonov copy of the Fokker F-27 (The Fairchild F-27 is made from the same plans, under license from Fokker, in Holland). We saw the Great Wall several times under us, on the crests of the mountains, as we flew for an hour and a half to the north east, toward Shenyang (formerly Mukden), where we are now sitting in the airport. (The Great Wall we saw two days ago was to the west of Peking). I now know that something I was told in grammar school isn't so -- no one on the moon could see the Great Wall with his naked eye -- it was even hard to see one section of it from 25,000 feet!

people standing on the street, who applauded us in a friendly fashion as we went by. Little children came running out of their apartment houses as we approached, clapping as they ran toward our procession. As we just learned in the tea ceremony at the Darien Institute of Chemical Physics, we are the first Americans who have ever visited their institute. "Foreigners" are therefore objects of great curiosity, and that explains in part our enthusiastic welcome on the Darien streets. As we entered the first building at the Institute, we saw a beautifully lettered sign in English, under Chinese characters, that said, "Warmly welcome our Distinguished American Guests". The same sign is facing me on the blackboard as I listen, in the tea ceremony, to the vice-chairman of the Institute's revolutionary committee. He is explaining when the institute was founded -- in 1908, when Darien was occupied by the Japanese. (The Russians were here from 1945 till 1955, when they turned it back to China. The Japanese took Port Arthur from the Russians in the Russo-Japanese War, late in the 19th century).

We've just visited a gas chromatography lab, where the instruments look good, even by U.S. standards, where Hewlett-Packard and Varian are two of the largest manufacturers, and I know the equipment from both these companies. Our visit is obviously a "big deal", since there were elaborate charts on the walls, in Chinese and English, telling of the sensitivities of the G.C. equipment. I photographed these charts for my friends at H-P. We're now touring labs concerned with petroleum chemistry.

We've now driven a mile or two through the city to the catalysis development lab. We saw many hundreds of people standing in the sides of the street, waiting to see us go by, so they could applaud us. I was very disappointed that it is impossible to get acceptable movies of such activity from a moving car, unless one is seated in the front seat, shooting through the windshield. So I'll just have to store those sights in my own memory, for my own use -- I can't share them with others via the movie I'm making on this trip.

The building we just entered had the same beautifully lettered sign of welcome on its blackboard.

We had a long talk by a chemist who is trying to catalyze Ammonia formation from hydrogen and nitrogen under "mild conditions". Certain biological systems can effect the reduction of atmospheric nitrogen, and it has been the long-time goal of catalysis chemists to put the Haber process out of business. Essentially all nitrogen compounds are made from the ammonia that is generated in this pre-World War I process that requires high pressures and high temperatures. Our speaker said that the catalytic process "was in the distant future".

We were given a banquet by the "governor" of Liaonang Province (I'm not sure of his title). Between [redacted] and me -- across from our host, who was between [redacted] and [redacted] -- was the chairman (!) of the standing committee of the revolutionary committee of Darien. He had "briefed" us on the population and the industries of Darien, when we first arrived and had our tea ceremony. (1 million in the city and 4 million in the neighborhood). He is a striking looking man, who would be a leader under any political system. We had all the standard goodies one expects at a banquet, and one helping from each of countless serving plates was tranferred to our eating plates by the gentlemen on either side of us.
(I think of him as the Mayor of Darien)

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After the banquet, we threw frisbees outside the hotel, and presented one frisbee t[redacted]he Chinese man who had develo[redacted] the best technique. It was quite dark, so it was good that we had phosphorescent plastic frisbees that could be "charged" by holding them near bright lights. Then they glowed for several minutes thereafter.

Just before we went up to our rooms, a busload of hippies rolled up. (They are the only other guests in the very large hotel in which we are staying.) (The hotel was apparently built for Russian advisors, and has been essentially deserted since they left in 1960.) I talked at some length with one of the young fellows in the delegation, all of whom are Maoists from New Zealand. He had gone to high school in Alameda, which is 10 miles from our home in Berkeley. We discussed the radical left in New Zealand, which has been delivered a severe blow -- just like the one in our country -- by the New Zealand withdrawal from Viet Nam. I asked him if his devotion to Maoism had been increased or decreased by his two-week exposure to modern China, and he said it had been greatly strengthened. Naturally I didn't argue with him, but I found this statement quite fantastic. As I've made clear by many comments in this diary, I think what Mao has done for China is really wonderful -- for China, which was in such terrible shape after centuries of bad government by their own people and by foreign powers. But I find it quite beyond belief that anyone would think that Maoism had anything useful to contribute to New Zealand. [redacted] and I spent more than a week on the South Island of New Zealand, in early 1965, and we were impressed by the fact that there was no poverty and no very rich peoples. It seemed to be a sort of ideal -- but very dull -- country, that had no apparent interest in the rest of the world, and was quite content to raise sheep and enjoy the benefits of a welfare state considerably more socialistic than ours. The young people of New Zealand who want to experience the competition of the capitalistic world emigrate to England, so by natural selections, New Zealand continues to live in the sleepy style that its citizens obviously enjoy. So I was really quite horrified to learn that there was a whole busload of people who want to impose the Maoist system on their own country, and that their enthusiasm for the system had been increased by their exposure to it in China. I keep thinking, "This is great for the formerly oppressed Chinese, but I wouldn't be able to live under the system". The length of the Cultural Revolution -- more than four years -- shows that the Chinese intellectuals were hard to convince, just as I would have been.

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We hear so much talk here about how badly oppressed the masses are in our country. But I have the strong feeling that anyone but a southern share cropper or a black from a slum in the big inner cities would find the best Chinese accommodations unattractive. It is hard, after seeing how the peasants and workers in China live, to feel sorry for the oppressed workers in America, each with his own automobile, refrigerator, and television set, and with access to a supermarket. It's clear that we have to continue improving the lot of our poor people, but I'm confident that it will happen faster under our system than it could by adopting any of the management techniques that have been developed here. These techniques have done fantastic things for a country that had truly been exploited for a very long time, and in which people really lived much worse than any animals do in our country, and many were in fact beasts of burden and nothing more than that. Coolies no longer pull rickshaws for rich foreigners, but they still do very hard manual labor for the state in which they now have an important voice.

After breakfast, we learned that the morning's program had been changed -- we are now going fishing on a 100 foot long boat. It is really a yacht that is used to entertain distinguished guests of the city. We are now anchored some miles south of the southern tip of the Darien peninsula, that juts out into the Yellow Sea. Only one fish has been caught in the past hour, but I've had a chance to catch up on my diary. The trip has been very relaxing, and we're now heading home for lunch and some "business" this afternoon.

I've just been looking at the distinguished face of my immediate host of last night, ("the Mayor") and my guess is that he hasn't seen any Americans since he chased them down through North Korea, from the Yalu river, which is only a few miles to the east of us. I'm glad we're friends now!

There is also a feverish shelter-building activity in Darien. There are the same huge piles of bricks along the streets, in front of all kinds of homes and business buildings. I saw only one radar antenna, high on the southern headland of the Darien peninsula. Our hotel is near the southern end, and the city is a few miles north with its port on the eastern shore of the peninsula. There is a parallel pensinsula to our east, and the water between the two makes the great harbor that is world famous.

After our nap this afternoon, we visited the public beach and went through the park along the ocean. We saw people digging for shell fish, and collecting sea weed, which is used as a food. I took movies of children riding a merry-go-round, with tanks and guns taking the place of the horses; the tanks and guns went up and down, just as one would expect. We saw long lines of glass-ball floats, which were not used to hold fishing nets, but to support bamboo frames on which seaweed is cultivated.

Yesterday, I noted that as we drove down the streets in Darien, and out through the countryside to our hotel, we saw hundreds of people standing on the side, clapping as we went by. I'll now have to change the numbers to read "thousands", and more probably tens of thousands. It seems that it is a big deal to see 8 passenger cars go down the street in a procession, so people stand on the sidewalk for long periods of time to watch us go by, just as I used to go downtown to watch the circus parade when I was a boy. As we drive along, there is the almost constant sound of hands being clapped. I now have a better idea of what President Kennedy was hearing that terrible day in Dallas. (Incidentally, I settled a long argument concerning the film speed [redacted] was using when he took his home movies of the President as he was being shot -- the clock I used was the clapping of a man in the background, behind the Presidential limousine. I could measure the amplitude of his hand motion, and when I coupled that with the fact that the power exerted in clapping (at constant amplitude) varies as the cube of the clapping frequency, it was clear that [redacted] Bell and Howell camera wasn't running at the "slow motion speed", but at the normal rate.) So I am very much aware of the fact that during the last moments of his life, President Kennedy was hearing the very pleasant sound of large numbers of people applauding his presence -- the same sound we've been hearing so much during these last two quite unbelievable days.

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We visited several establishments after leaving the park. The first was a department store, which we quickly put out of business. Everyone stopped what he was doing to look at us and follow us around. We then walked down a block, almost hemmed in by curiosity seekers, to a "friendship store", where some of us bought various articles to take

home. An enormous crowd gathered outside the store, and applauded us when we finally came out and entered our cars. People were jammed at most of the windows with views of the store entrance, and a number of people were standing on roof tops. I asked [redacted], our cute little interpreter, if the people knew we were Americans. She said they really couldn't make such a fine distinction -- to them we were simply foreigners. b6 b7C

From the friendship store, we went to the "USO Club" for foreign sailors, where there was a fine selection of Chinese goods for the export trade. I bought some presents, and therefore spent the first Chinese money I've used in the past two weeks. [redacted] has taken care of the few monetary transactions we've been involved in -- such as paying for the birthday dinner for [redacted]. I'm sure that foreign sailors are very unhappy about the new morality in China -- there aren't any of the "red-light districts" that mark port cities the world over. b6 b7C

After dinner, we went to a performance of the Darien acrobatic troop. It was scheduled specially for us; the troop had planned to go on tour yesterday but our friend the mayor persuaded them to stay an extra day to entertain us. It was a really fine show, and because I had the only movie camera in the group, I was again seated in the middle of the front row. The theater was filled when we came in, and everyone turned to face us and applaud us as we were shown to our seats down front. Since I'm an old circus buff, I was able to concentrate my photography on the most sensational part of each act. The lady magician called for a volunteer at one point, and [redacted] went up on the stage. He caused quite a sensation, and he smiled all the while, and exuded good fellowship. We were all proud of him, and the Chinese obviously enjoyed seeing him on the stage. b6 b7C

We are now ready for bed, and we can hear the sound of frisbees falling on the street below our room. Just before we went in to dinner, we looked out the window and saw about a dozen Chinese getting quite good with the two frisbees we'd given them. They even had [redacted] and the elevator girls engaged in the group play. We will all recommend that future American travelers who come to China bring a good supply of frisbees. b6 b7C

On the other side of the world, [redacted] and I are aware that our little daughter is now awake on her big day -- in a few hours, she'll be flower girl at her cousin's wedding in Marblehead, Mass., and will be the first to walk down the aisle, in her special dress that her Grandmother made for her. [redacted] and I had planned to attend the wedding, but everyone insisted that we go to China instead.

Sunday, July 15, 1973

[redacted] and [redacted] had to see the doctor this morning -- she arrived at the hotel with her bag and a red cross on it. [redacted] is staying home but [redacted] and the rest of us have just finished an hour's drive to the "fish factory", where we are having tea and listening to a talk by the vice-chairman of the revolutionary committee of this commune. The factory deals in many sea products. 5,800 workers. 3 factories in the commune. 1) Frozen fish, 2) ship repair, 3) net making. In this factory there are 4 "catching teams". 166 boats, large and small. 4 methods of catching b6 b7C

fish: 1) lights to attract fish; 2) encirclement by nets; 3) dragging nets; 4) harpooning whales. The whole port was designed and built between 1962 and 1965. In use sin[redacted]1966. Loading capacity for f[redacted] is 135,000 tons per year. 2 railway lines come into the commune. Factory is capable of processing all the fish that can be brought to the commune in one day by all the boats. Total output this past year is 70,000 tons. This is 1.5 X production in 1966. Average worker gets 70 yuan per month. Lowest, 35 -- highest, 168 -- he is a captain of a fishing boat.

Out the window, we can see wooden boxes of fish being transported from the boats to the factory -- turning corners on a set of conveyor belts, very much like baggage handling in a U.S. airport.

We've just put on rubber boots, and the largest pair available pinches my toes. [redacted] couldn't get into the largest boots so he just wore his tennis shoes, and was not inconvenienced. We saw the whole process from the conveyor belts through the sorting tables to the freezing rooms and the refrigerator storage. We all put on huge black Manchurian winter coats with black fur trimming and went into the large storage area. We inspected the ice making plant where they make the ice that is carried on the fishing ships. b6 b7C

After the tour, we had a lunch that was exclusively of the products of the factory. [redacted] had a hard time because he doesn't like to eat fish. I managed to avoid eating the muscles and sea cucumbers, but I did eat a substantial helping of shredded whale meat, some oysters, and other assorted sea-derived goodies. The manager of the plant was delighted that we all went light on the sea cucumbers, and he almost polished off the heaping plate all by himself. After lots of toasts, including one by [redacted] who had once worked in a fish cannery in California, we drove back to the hotel just in time to pack for the train trip to Shenyang. Shenyang is the largest city in the Northeast (Manchuria) and was called Mukden during the Russian occupation. It is a great center of industrial activity -- like Pittsburgh. The train ride, of 6½ hours was pleasant, and we all had naps in our comfortable compartments. The pillows are filled with spherical grains of some material, each about 2 mm. in diameter, and quite uncomfortable to Westerners. I used a large turkish towel as a pillow, and everything was fine after that. We had dinner in the dining car -- the first Chinese meal I've ever had on a train. We had [redacted] version of a screwdriver -- Mao Tai in the sweet carbonated lemonade the Chinese adopted from the Russians. It had no ice in it -- we haven't had a cold drink since we left Peking -- and it tasted just great to me. We walked through a number of 3rd class cars in which Chinese workers were sleeping on bunks, three high. I felt as though I was in one of the famous opium dens of Shanghai, before liberation, when coolies slept that way after smoking the pipe to drown out their pain. b6 b7C

We are now in the Shenyang hotel, where we had a friendly welcome from the vice chairman of the revolutionary committee, plus several professors from neighborhood universities and technical institutes. It is now time to hit the sack, so we'll be ready for the tour tomorrow.

Monday, July 16, 1973. Shenyang (formerly Mukden, a city of more than one million -- the largest in Manchuria).

We had a fine sleep in the very modern hotel in which we're staying -- on Red Flag Square, with its large statue of Chairman Mao, standing over a montage of revolutionary figures. [redacted] and I walked around the square after breakfast, and up and down some of the streets radiating from the square. b6 b7C

Our hotel is the most modern we've stayed in since we arrived in China. The plumbing is excellent and the breakfast was superb -- hot toast and fine butter to go with the excellent omelet, crowned with excellent coffee -- the only good American style coffee we've had in China. I had two cups, to make up for the fact that I haven't had any for the last two days. (This city looks more like a European city than any we've seen.)

We're now in the tea ceremony room of a heavy machinery factory, hearing from the vice-chairman of the revolutionary committee. The plant makes large hydraulic presses, rolling machines for steel mills, and mining machinery. The plant was built in 1937, by the Japanese, and it now employs 11,000 workers, 1,800 of whom are women. This area was liberated in 1948, whatever that means. (The Japanese were driven out of Manchuria by the Russians in 1945, and the Russians left by treaty, in 1955, so I don't know what the 1948 date means.) We are now getting the standard dope on what percent the production is over that of last year, over that at the start of the Cultural Revolution, and over that at the time of liberation. (We get the same kind of figures at each Hewlett-Packard board of directors' meeting.)

We have just had a most interesting tour of the heavy machine shops. The only times I've been in such shops in the U.S. have corresponded to the times the pole pieces and vacuum tanks of the 60-inch and 184-inch cyclotrons were being machined. So these visits were 25 and 35 years ago, respectively. The shops we've just seen appear to be infinitely dirtier and less well organized. Finished pieces of enormous size seem to be stacked haphazardly, as though the people who ordered them had changed their minds and decided not to have them delivered. No one wore safety glasses, and the level of illumination was unbelievably low -- generally a single 20 watt light bulb hanging down in the neighborhood of the cutting tool. The machines came from many countries -- Hungary, Russia, Germany and Japan. The scheduling seemed to be disorganized -- probably the large vertical lathes, planers, etc. were scheduled by an elaborate priority system, such as we used during the war. The only item that seemed to be made on a "production line" was a large diameter member of a reduction gear system -- about 20 feet in diameter, that was being cut in a very efficient looking way.

Now on tour of the clinic -- there are 40 doctors, and all treatment is free. We just saw our first moxibustion treatment -- for a sore back. Moxibustion is one of the three branches of traditional Chinese medicine which according to Mao's teaching has now been integrated with western medicine. The two other branches are herbal medicine and acupuncture. In the moxibustion treatment we saw, the patient had eight glass spheres of about 3 inch diameter attached to his skin, just above his belt line. Each sphere had originally contained some compound that burned slowly, and consumed the oxygen in the air. This reduced the pressure to 80 °/o of atmospheric pressure, so the man's skin was sucked into the openings of the

spheres. The treatment was to last about ten minutes.

Now back to the big shops, where we visited the foundry, where the enormous castings we watched being machined, are cast. Unfortunately, the workers were mostly at lunch, so we didn't see the exciting process of pouring white hot iron into sand and ceramic moulds.

My overall feeling about this huge industrial plant is that the China of peasants is now able to make anything it needs in the way of heavy machinery. It is my impression that the shops we've just seen are about fifty years behind those in the U.S. -- when I worked in a steel mill in 1929 (44 years ago), conditions were vastly cleaner and more efficient than what I saw today. But of course, the U.S. was a highly industrialized country in that year, even though things were then quite old-fashioned by modern U.S. standards. So it should be realized that China today must be considered to be highly industrialized, and completely self-sufficient in every sense of that word.

In the discussion session, we asked the questions about industrial safety that are always on our minds as we walk through the dimly illuminated shops where no one wears safety glasses. The manager says that essentially no one gets hurt, and the workers object to wearing safety glasses. He said they had no records of accident rates, but as we heard several times on our walk through the shops, in answer to our questions about industrial safety, "That is something that is going to be taken up at the next meeting of the revolutionary committee".

As an example of the inefficiency in the use of the large machines, I'll note the following example: a large semi-cylindrical casting -- about 20 feet in diameter -- was having the "upper ends (tips) of its U-shape" planed on a very large planer. The tool took a cut across the left hand upper side of the U, and then at the same slow "cutting speed", it went all the 20 feet to the right hand upper side of the U. It then retraced its path for the next cut at the high-speed "fly-back speed". Two movable ridges on the planer carriage could have speeded the driving motor up to its "fly-back speed" for most of the twenty feet when the cutter wasn't doing anything. This would have cut the machining time for this object by a factor of 3 or 4. In a U.S. plant, the buyer of the object, or the efficiency expert of the plant would have insisted on such a measure, because the cost of such a job is largely the rent on the expensive planer -- if the time of use is cut by four, the cost may be cut by three. An even simpler way to save time on the machine would be to cut each side of the U separately, with short strokes, and then perhaps take a final light cut in the way it was being done as I watched. I had the impression that many other of the jobs I watched were done with similar disregard for efficiency in the utilization of these very expensive machines.

Our hotel room in Shenyang has a hook in the ceiling over each bed, to hold up a mosquito net. But the net isn't there any more, because China is remarkably free of flies and insects these days. (There were mosquito nets over our rooms in Darien but they didn't seem to be needed.) We're told that the flies were eliminated by millions of fly swatters -- not DDT as I would have thought. "Old China hands" are most impressed by this feat -- together with the elimination of filthy slums, starving people,

and crime. These are all remarkable achievements, and they have been brought about by the great sense of dedication that the Chinese people have developed to each other -- "the masses", to use an overworked phrase.

It seems to me that if one wanted to be a Communist, he should certainly prefer Maoism to the very imperfect kind of Communism they have in Russia, which the Maoists (and I) think of as a poorly disguised form of Capitalism, with an elite class in positions of power, from which they exploit the masses. But it is probably more appropriate for me to knock off such comments, because I don't want to be any kind of Communist, nor live under any Communist regime.

We're now visiting the temple built by the first two emperors of the Ching Dynasty; Manchus --(after the Ming Dynasty), before they moved their capital to Peking. It is beautiful, but not so different from the several similar compounds we've visited in Peking -- the Forbidden City and the Summer Palace. And since I'm running low on my high speed Ectachrome film, I'm not taking pictures inside. To any casual viewer of my edited film, this temple would be indistinguishable from the other two. Ronald Reagan would say, "If you've seen one temple, you've seen them all".

The atmosphere in Shenyang is badly polluted, just as it is Darien. The reason is that essentially all the energy required to run these "Pittsburghs" comes from the dirty Chinese coal. We have been told many times by the Chinese that they have no pollution problem, and compared to Gary, Indiana, their air is very pure. But that is damnation by faint praise. Perhaps the reason that the Chinese aren't convinced that cigarette smoking "is a hazard to their health" is that everyone breathes so much carcinogenic smog that the added amount from cigarette smoke can't be detected by statistical methods. It must be really awful in the winter when the coal smoke from all the chimneys in the little brick homes is added to that from the factories.

The people of Shenyang appear to be the happiest and friendliest we've seen in China. They smile to each other, something I never noticed in Canton or Peking -- except among the maids at the Peking Hotel. The people of Darien were a bit more effusive in their applause, which was always accompanied by smiles. They seemed more surprised to see us, and their welcome couldn't have been warmer. Here in Shenyang, they don't seem to find us such objects of curiosity, but they clap and smile to us as we drive by. Perhaps their apparent happiness is caused by the fact that they seem to live better, on the average, than the city dwellers in Peking, Canton and Darien -- the other members of our very limited sample of cities.

Our hosts in Shenyang gave a banquet for us after our tour and then accompanied us to the train for Peking. It was a very nice banquet -- now that I've overcome my fear that I would gag on something and have to spit it out, banquets have become less painful for me. But I still find it very unpleasant to have the two people on either side of me pile lots of stuff on my plate, some of which I'd rather forego. I suppose that a psychiatrist would pin this on my reluctance to go back to my childhood days when my mother and father did that and told me that it was "good for me". Last night, we had some broth with corned beef in it, and I noticed that everyone was eating the meat with chopsticks, and not eating the broth with their porcelain spoons. So I did the same, and finished all my corned beef. Then

shortly thereafter the waiter picked up all the soup bowls but mine -- he shoved mine toward me to indicate that I should drink my broth, the way I now saw the others must have done when I wasn't looking. Since I go on the principle of "When in China, do as the Chinese", I drank my broth, and the waiter took my bowl on his next trip. But I still had the psychological jolt of being returned, kicking and screaming, to my childhood days.

As we left the hotel in the dark, at 8:30 PM, there was a huge crowd at the front of the hotel, clapping as we got into our cars.

Tuesday, July 17, 1973

I'm writing this in our compartment of the overnight train, as we pass through the suburbs of Peking. We just finished breakfast (European style) in the dining car, after passing through six cars crammed with Chinese people who have sat up all night on hard seats. As [redacted] has said several times, "The Chinese people are tough". The road bed can best be described as not so smooth as the one which so impressed me on our ride from the border to Canton. Most everyone took a sleeping pill, and we all seemed rested at breakfast. b6 b7C

For our transportation from the train station to the airport, we were demoted from our procession of cars -- which must now be assigned to another group -- to a small bus. We stopped in the square at the Gate of Heavenly Peace, and threw frisbees for a half hour. Since the Chinese do group calisthenics every morning, they probably think that frisbee throwing is our compulsory group exercise. We gathered the usual large crowd, and a few adventurous souls in the crowd could be persuaded to try frisbee throwing. [redacted] is pleased that he can catch and throw the frisbee acceptably now, and the fact that he joins us no doubt helps induce members of the crowd to try it. [redacted] has tried to interest a number of passing PLA men (members of the Peoples' Liberation Army) in frisbees, but with no success. Probably some PLA men not in uniform have tried, but when they are in uniform, they have nothing to do with foreigners. If they are in a crowd of applauding people, they stand impassively. We don't understand how their command system works; no one in the PLA wears any markings on his uniform to distinguish his rank. The buck private wears exactly the same brown uniform as the four star general, and the generals serve for a month every year "in the ranks", the way scholars work in the agricultural communes -- to keep them from getting too impressed with their own importance. b6 b7C

At the airport we were greeted by many friends, and had lunch before boarding the IL 62 for Shanghai. [redacted] who really runs the Academy of Sciences -- Kuo Mo-Jo isn't a scientist but is rather a distinguished scholar of ancient Chinese writings -- showed up after lunch and asked me to take a present to [redacted] widow of the man under whom both [redacted] and I received our Ph.D. degrees at the University of Chicago. Naturally we were delighted to accept the package. We had a good chat with [redacted] who said he had been using the HP-45 calculator we'd given to the Institute of Atomic Energy and to him. [redacted] the head of the Institute of Atomic Energy said he particularly liked the talk I gave on Modern b6 b7C

me something I hadn't known -- that Techniques of Data Analysis (at [redacted] request). He also told/he and I had independently discovered the emission of long range alpha particles in the fission of Uranium. I did my work at the Argonne Lab in 1944, but it wasn't published till after the war; he did his work in the Curie-Joliot lab after the war, using nuclear emulsion instead of the ionization chamber I'd used. He had also read my Nobel lecture, so he complimented [redacted] on her work as a scanner in my bubble chamber group, and on her activities as hostess at our group seminar which is held every Monday night in our home. It is interesting that although he and others obviously know that I am a Nobel Laureate, that fact has never been used in any introduction, and it has been quite conspicuously ignored in this egalitarian country, where all indications of relative rank (except for Red Star cars and protocol numbers) -- are studiously avoided. b6 b7C

We arrived at Shanghai airport just ahead of the typhoon which is expected tonight. We are now sitting in the tea ceremony room of our hotel (drinking a cold orange-flavored drink rather than the ubiquitous tea), and being introduced to our hosts -- one of whom is [redacted] sister. The hotel -- at least the ground floor -- is air-conditioned, and that is a very pleasant surprise in the very hot weather we expected, and experienced as soon as we disembarked from the plane. (Our room is large and very comfortably air-conditioned). b6 b7C

I met Professor [redacted] who worked for his Ph.D. at the University of Minnesota before the war. He said he had met me in 1938 when I went to Minneapolis to give a talk, at the invitation of [redacted] a friend from University of Chicago days. b6 b7C

There has been a long meeting of the "revolutionary committee" of our delegation, to work out the schedule for the next few days. [redacted] and [redacted] were down for two talks each, and [redacted] and I were not down for any talks. [redacted] at first thought this was an oversight, and said he would discuss it with our hosts, to make sure that we talked. I put my foot down hard on this suggestion -- my only other strongly expressed feeling on the trip so far concerned our second and very successful trip to the Great Wall. I said I wouldn't permit anyone to be talked into having me give a talk that if they had wanted, they would have scheduled. I said that one just couldn't ask his hosts to listen to a talk that they had indicated by their scheduling, that they didn't want to hear. (My pyramid talk is the most popular one I've given in all my life as a lecturer -- in the United States -- but if the Chinese decided they would rather have two talks by [redacted] and none by me, I'm delighted by their reaction.) b6 b7C

There was a lot of discussion and many suggestions for changes in the schedule, but I didn't engage in this part of the session. I'm happy to see anything that our hosts or the members of the delegation think will be of interest. Everything is so unusual that I can't make choices -- I'm fascinated by everything I've seen in the past 17 days, and expect to stay in that state for the remainder of our visit.

A few of us went downtown and rode the elevator to the top of the Shanghai Hotel, the tallest building in this, the largest city of the world (so the Chinese tell us -- I don't know what the figures are, but there must be at least 10,000,000 people in the city itself.) Everyone

has seen pictures of the main street along the Wangpoo River, with its tall buildings from the pre-war years, that housed the foreign-owned financial empires. This street was called the Bund, and it was formerly the Wall Street of China. From the top of the hotel I could see most of the city, and in my experience, one such view of a city locks its geography in my memory for many decades. I can't get the same feeling for a city by studying a map -- I have to see the city to remember how it is laid out and oriented.

After dinner, we went to the acrobat show, which was quite comparable to that in Darien, and had several acts that were almost identical. I used great determination in not taking my indoor movie camera -- I have only 2½ rolls of high speed Ektachrome left, and I hope to see something in the next five days that I'd rather use the film on than a retake of the Darien acrobat show. So I simply enjoyed the show as I have enjoyed circuses all my life.

Wednesday, July 18, 1973

We have just driven for an hour through the countryside outside Shanghai, to the Institute of the Nucleus, where we are to spend the day. (I should mention that we had cream in our very American coffee at the hotel this morning -- a very special treat after the boiled milk we've had so far.) The girls have gone to the psychiatric hospital, so I rode with [redacted] in [redacted] place, with [redacted] -- the very friendly Ph.D. from Minnesota, with whom it is easy to communicate. We learned that his wife worked from 1938 to 1941 as a nurse at the Mayo Clinic, Rochester, Minn., where my father was a doctor on the Clinic staff, at that time. My guess is that since Chinese were very rare in Rochester at that time, and because of my mother's childhood experiences in China, [redacted] wife has been a guest in our home in Rochester. Perhaps I'll learn through [redacted] that this was so -- we haven't met any wives of physicists except [redacted] he is the head of the Science and Technology Association, whose guests we now are. I thought that we would meet [redacted] who is a Ph.D. in Physics from the University of Michigan, but we haven't even seen her. b6 b7C

We are having tea and hearing the standard introduction to the "mission" of this institute. It has 6 divisions: 1) Low energy nuclear physics, 2) Application of nuclear radiation (isotopes) to medicine, 3) Electronic equipment, 4) Cyclotron, 5) Radiation damage and radiation protection, 6) Radio chemistry. Cyclotron is 1.2 meter diam: 13.6 Mev Deuterons. Electron Van de Graaff: 1.5 Mev, "for radiation purposes" -- damage, etc. Low energy nuclear physics has theoretical division with 12 people, studying (n,γ) processes and fission. Experimental group studying (30 people) angular correlations: Be $(p,d\,2\alpha)$ γ-ray spectroscopy with NAI crystals. They are making Germanium crystal detectors to improve their γ-ray resolution.

We've seen the Li-drifted Ge detectors they've prepared, which have 8 cubic centimeters of active volume in the planar geometry and 26 cc in the cylindrical geometry. (This seems very high by U.S. standards, but I'm not an expert in this field.)

We're looking at thermoelectric generators using Plutonium 238 -- 20,000 curies -- 20 watts electric; Pu^{238} from reactor in Peking. 500° C junction; 4.3 °/o efficient.

The cyclotron was made in 1964 -- all Chinese construction. It is obviously built from the plans of the Peking cyclotron, that came from the USSR, but with improvements in many details. The cyclotron doesn't appear to have been used for some time, and neither does the well-equipped "counting room" in which we are now sitting. It is my impression that "all the good guys" are somewhere else, working on the weapons projects, just as during WW II, all our nuclear physics laboratories at universities were effectively shut down by the emigration of the "best nuclear physicists" to radar labs and the Manhattan District. During World War II, only "slobs" and Conscientious Objectors were left in the old nuclear physics labs, and the labs we're seeing today have the same appearance as the one or two university nuclear physics labs I stumbled onto during WW II. The speaker has said that Gallium 67 (which I discovered in 1937) is injected into patients; it concentrates in cancer cells, and is detected by a NaI detector. I described the "Anger Camera" we use in 2000 hospitals in the U.S., and it was clear that the idea was new to them. They must use an NaI "scanner", which requires that the patient receive a much higher radiation dose.

The electronic equipment we see made in these laboratories is absolutely first class in appearance, and looks very much like Hewlett-Packard or Tektronix products. We don't see it in use in the labs, so no doubt it is sent to other places -- most probably to the Chinese"Manhattan District".

We've now heard about, and inspected a strong Cobalt 60 source for irradiating plastic materials to improve their insulating properties. Such material is available in the U.S. from the Raychem Corp., that has been a fantastic financial success. Their primary customer is the Boeing Co., that insulates all the miles of wire in a 707 or 747 with plastic that has been irradiated with doses of 10^5 rads -- usually from directly accelerated electrons from "Cockcroft-Walton machines", or their more modern equivalents.

I've spoken of the apparent desertion of the low energy nuclear physics labs, in spite of their statement that there are 30 people in the experimental physics section. That doesn't necessarily mean that the physicists who used to work in them have gone to work on weapons -- they could as easily be working in plants making integrated circuits or computers. I can't think of any reason to keep a low energy physics lab going these days; everything that I could imagine to have any interest has long ago been measured several times, and is tabulated in extensive handbooks, to say nothing of the original literature. I can't understand why low energy nuclear physics goes on in the U.S., except to solve very difficult and specialized questions, such as low energy cross sections for the nuclear reactions involved in the generation of the sun's power. I've had an interest in nuclear dipole moments, and in the quadrupole moment of the deuteron. But I can't understand how anyone could be bothered to measure octopole or hexa-decapole moments. I just don't want to know that much detail about <u>any</u> subject, and I can appreciate

why the Chinese planners would turn off work in low energy physics and send the people who had formerly engaged in such work either into the weapons program, or equally importantly into what we call "industry".

Our hosts have just treated us to a wonderful banquet lunch out here in the country. If we hadn't learned how to refuse, gracefully, some of the semi-infinite number of dishes that appear, one after another, we would all now feel like Peking ducks at the automatic stuffing machine. After I had concluded that "this must be the last dish", five more came, including two soups. I ate something from every dish except the string beans and bean curd -- one dish out of ten.

A blackboard has materialized, and we're going to listen to an informal seminar on the low energy physics being done here at the Institute of the Nucleus. There are 18 Institute people in the room, three of whom are women. The problems being worked on are fission physics and (n, γ) reactions. (The seminar was arranged on the spur of the moment, at the request of our delegation, as a way to hear from some of the young, active physicists, rather than the top, older people we usually meet.)

One of the theoretical physicists is showing how to describe the fission process mathematically, and fit the experimentally measured (from the literature) level density in non-fission reactions. [redacted] b6 b7C and [redacted] are starting to quiz him in the manner one uses in a "Ph.D. final oral examination", to find out how deeply he understands the subject. The isotope being considered is Thorium 232, undergoing fission with neutrons of energies from about 1-5 Mev. The Thorium 232 experimental fission cross section results were measured by members of this institute (?) about 2 or 3 years ago, using the Van de Graaff generator at Fudan University. (I asked, and they do have the "Barn Books", issued by the AEC, which tabulate measured cross sections of all elements at all energies from sub-thermal up to tens of Mev.)

Someone is now giving a theoretical model to explain the shape of the γ-ray spectra from heavy isotopes ($A \simeq 200$) bombarded by neutrons of various energies. The data first came from Kinsey at Chalk River, about 20 years ago, and the Chinese theorists are proposing an explanation of a "bump" in many of the γ-ray spectra at about 5.5 Mev. Our theorists didn't know enough about this subject to ask meaningful questions, so the discussion didn't get very far.

They are now asking our theorists for an explanation of the logarithmic rise in the p-p cross section, as recently measured at the intersecting storage rings at CERN, and as communicated to these theorists by [redacted] last month. b6 b7C

The fact that all discussions have been about theory, and none about experiment bears out my earlier observations and conclusions that this institute has been out of low energy experimental physics for some time.

Just after I wrote the last sentence, the leader of the discussion asked us for our opinion on the best way to change the institute's

fixed energy cyclotron into a variable energy cyclotron. We said we thought the way they did it at Peking was the correct way -- to use sector focusing. They asked what we thought about using negatively charged hydrogen ions, and we agreed that sector focusing was to be preferred. So apparently they would like to improve their cyclotron, which isn't very useful any more. We had earlier asked how they would get the money to do such a job, and they said they would have to ask the Academy of Sciences -- by writing a formal proposal rather than by talking to the Academy people. So they have apparently been thinking about writing such a proposal to revitalize their cyclotron program.

After this discussion, I presented the Institute with two color photographs of the Crab Nebula, and made my standard speech on the subject. They then asked for a late report on the "3 degree Kelvin black body radiation", so I gave a fifteen-minute talk on the subject, with all the latest experimental results. I also spoke in some detail on the search for the "ether drift" -- the motion of the earth with respect to the reference system in which the black body radiation is isotropic. I told of the two experiments done so far in this field, of their sources of error, and of [redacted] experimental proposal to minimize the sources of error, and to find the expected anisotropy, due to the motion of the solar system with respect to the "fixed stars". They had no way to know that I was prepared to give this talk, and I found out later that no other member of the group could have given it. b6 b7C

After a short rest in the hotel, we went upstairs to the restaurant for our second banquet of the day, and by far the most elegant meal we've had in China. It was given by the man we would call the mayor of Shanghai -- I'll omit his party title, which any reader of this diary can by now fill in from memory. I never have to look for my place card any more -- I simply look for [redacted] at the head table, and sit opposite him. Since he is at the right of the host, this puts me at the right of the number two man on the Chinese protocol list. And [redacted] is always on the left of this man, across the table from [redacted] As usual, we had 3 tables, each for 8 people, and the food was exquisite. There were ten courses listed on the menu, but I would think a fairer number was twenty; when we finally finished with the warm dishes, (after eating the hors d'oeuvres), we had two soup courses, a dish of fancy rice. "sweets", some ham pie, two slices of watermelon, a peach, an eskimo pie -- 7 courses after the many regular warm dishes, each of which could be a meal in itself. In Peking one is served a bowl of rice at the beginning of the meal, but in Shanghai, the rice comes near the end of the meal and almost everyone holds up his hand to refuse it -- to indicate that rice is for peasants, and we've eaten so much food that we can no longer think of eating such an ordinary food as rice. (At least that is my interpretation of the fact that 7 out of 8 at our table waved aside the proferred rice.) I went Kam Pei with Mao Tai on two occasions; it doesn't scare me any longer, and I'm even beginning to enjoy its flavor, which I thought was just terrible the first time I tried it. b6 b7C

It would be impossible to describe the elegance of the service at the meal, so I took some movies of the three beautiful birds that the assistant chef carved out of melon this afternoon -- one for each table. When the warm soup course came, it was in the most beautifully carved

winter melon; it took me some time to realize that the lovely designs embossed on the soup container had not been baked on in a kiln, but had been carved this afternoon for this special occasion. Again, I took movies of this amazing carving because no one would believe it without seeing the pictures. We asked to meet the Chef, and he and his assistant came into our private dining room to be toasted by everyone. I took their movies, [redacted] took a couple of the new Polaroid pictures to present to them, and everyone shook their hands and offered congratulations on a magnificent meal. b6 b7C

[redacted] sister was at the head table, and she and all of us were excited by the news in today's Peoples' Daily that [redacted] had had an hour's audience with Chairman Mao, [redacted] and [redacted] Since I am now in China, I should say that on the front page of the Peoples' Daily (our picture was on the back page), there was a picture of Chairman Mao and a smiling [redacted] After the banquet, I took a movie of his sister and three of his classmates at the University of Chicago - [redacted] She held the copy of the Peoples' Daily, with her brother's picture with Chairman Mao showing, I hope, in the movie. There was private discussion in our group concerning the possibility that [redacted] might be arranging to return permanently to China. [redacted] said no; the picture showed [redacted] in western clothes -- this indicated that [redacted] came to see Chairman Mao as an American, and not as an "overseas Chinese". b6 b7C

[redacted] and the other girls had an interesting visit at the Shanghai psychiatry hospital, but since I wasn't with them, I won't give a second-hand report.

Thursday, July 19, 1973

We've just driven the ten kilometers from our wonderful hotel to Fudan University, where we are seated, ready to be served tea and information about the University. There is no way to convey to the reader a sense of the hustle and bustle of the Chinese people one sees as he drives through the streets of Shanghai. It is an overwhelming experience to watch so many tens of thousands of Chinese citizens, each "doing his thing". Some are riding bicycles to work, some are peddling tricycle "trucks", some are doing work such as digging up the street or building brick walls, some are children walking in groups all of the same age, some are working in little shops, some are doing chores in their small homes, and some are workers in factories who knock off their work for a moment when they hear the strident horn of our Red Flag car, and peer out their windows as our procession goes by. The main impression is one of great activity and great sense of purpose in doing something for the benefit of all the people of the country.

One thing I haven't commented on so far (I think) is the almost complete segregation of the population by sex. Men walk with men, and women walk with women -- there is essentially no social activity in which men and women walk down the street together. This behavior is also true of Cairo, but there one doesn't see women on the street very frequently -- their place is in the home. In China, one frequently sees girls of

college age walking down the street holding hands, and I've seen a few men doing the same -- just as they do in Cairo. (I've spent hours walking in Cairo with my good friend and great Archeologist, [redacted] holding hands in the Egyptian manner.) Late marriage was at first encouraged as a birth control measure, and it is still encouraged now that reliable birth control methods are available, so that people in their twenties can be sent wherever the State wants them to go, without producing stresses in young families. And one of the easiest ways to encourage late marriage is to keep the boys away from the girls during the time they are from less than 15 till they are about 30. b6 b7C

Now back to the data on Fudan University. It was founded in 1905. The students rebelled against the French, who operated it, and separated from the original university to form Fudan University. After liberation, it was greatly expanded. 13 subjects, research labs, some factories and workshops including an electronic instruments factory, computers, and optics (intense light sources). 151 professors and assistant professors, 292 lecturers, 1331 assistant lecturers, 1100 staff and other workers (these help run factories) .1700 students -- only 2 classes since Cultural Revolution. Before GPCR (Great ProletarianCultural Revolution) they had 5 year course with 6500 students.

[redacted] son is with us this morning, as is [redacted] sister. [redacted] son is an American citizen, who is enjoying his first experience of living as an ordinary Chinese boy in "the old country". He made his way from Canton to Shanghai by what would correspond to hitchhiking in our country -- he hasn't used his supply of American dollars to buy passage on jet airplanes, but has made friends with the peasants, and lived with them in his travel by train, bus and animal-drawn cart. (He "integrated with the broad masses"). b6 b7C

We are now on tour of the Physics Department labs and have just seen some very intense light sources that they use in place of arc lamps in theater movie projection. The brightest lamp is filled with 2 atmospheres of Xe and contains some Indium metal. It is started at 700 volts A.C., and the discharge is at first in the Xe. But then the In is vaporized, and starts to carry the discharge; the In lamp is run on 45 volts D.C. This type of lamp is similar to the Sodium lamps on the San Francisco Bay Bridge, which start in neon, and glow red until the metallic sodium vaporizes. Then the light turns yellow, as the sodium, with its lower excitation potential takes over from the original neon. I haven't seen a Xe-In lamp in our country, and it is something we should build. [redacted] tells me that the lab technician who built these lamps is now a national hero. b6 b7C

Now we're looking at their "home-made" Van de Graaff generator, whose energy has been pushed up from its original 2.6 Mev to 3 Mev. This is a nice looking machine, particularly in the experimental room, where the beam transport equipment appears to be built of stainless steel, and is of excellent design and construction. There is some optical equipment set up to use the beam -- this indicates that the capable people who build intense light sources are making use of this facility to learn about the excitation of gases of interest to them. One of the optical instruments is a 90° deflection prism spectrograph of Chinese manufacture.

In the counting room, there is foreign-built equipment -- a French 400 channel p[redacted]e height-analyzer and a Japan[redacted]-built Tektronix scope. (Just as Hewlett-Packard has its Japanese affiliate, YHP, Tektronix must have a similar affiliate that is 51 °/o owned by the Japanese and 49 °/o by Tektronix -- that is the maximum allowed by Japanese law.)

We've been shown a lab where they are studying isotope separation by laser beam excitation of bound molecules to repulsive states that come apart into the constituent atoms. This is a 40-year-old idea which has suddenly been revived all over the world, largely due to the development of high power lasers. (The light frequencies are of course widely different for molecules made with different isotopes, since the moments of inertia vary to first order with the isotope masses.) I first heard of this revival of interest in this method of isotope separation at a Physics Department colloquium in Berkeley this spring. [redacted] tells me that there was a review article in a recent issue of Science, by a Russian physicist. I haven't heard anything about the possibility that the method might work on UF_6, but it doesn't take much imagination to realize that if it did work on that molecule, it would greatly affect the "problem of the nth country". (If U235 became easily available to everyone, and inexpensive, then all the sophisticated "bomb technology" required to make Plutonium bombs would no longer be required, and really "everyone could have his own bomb".)

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As we passed the Physics Department library, which wasn't on the tour, I asked if I could look at the U.S. journals. (I wanted to see how long it took to get the Physical Review to the shelf of a Chinese library). I found the proper shelf, and found that the latest issue was January 1973 -- not bad for an issue that probably doesn't get to Berkeley before February or March, and must come here by sea mail. But then I made a most interesting observation -- the green color of the Physical Review cover (which I have been looking at for 42 years) was the wrong shade of green. This answers the question I posed in Canton about whether the Physical Review was reproduced in China and sent to libraries all over the country. (It is). (The American Institute of Physics translates and publishes complete issues of all the Russian physics journals, to which most Physics libraries in the U.S. subscribe.) I didn't think that my question in Canton had been impertinent -- but apparently it was so considered; it was the only occasion in my three weeks in China on which I felt that I had "said something wrong". Perhaps if [redacted] had suggested that the American Physical Society send a microfilm of each issue of the Physical Review to the Chinese Academy by air mail, to speed up the reproduction process, he could have been considered to have made a friendly suggestion, but that wasn't the case when I made the suggestion. In fact, the reply I got was interpreted by me to indicate that they didn't reproduce Phys. Rev., but that copies were available at a very few libraries in China, where they could be made available "on request" by others. I hope that Sam Goudsmit, the editor of Phys. Rev. will talk the matter over with [redacted] in the light of what I've just written.

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We've now driven through the northwest suburbs of Shanghai four times, and each time we've seen hundreds of concrete block houses left over from the war of liberation. The block houses were built by the

Koumingtang, to keep the PLA from enveloping and capturing Shanghai -- they were of course unsuccessful. (I heard later that the "pill boxes" were of Japanese construction.)

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We are now hearing of the mission of the Service Center for Computers. (It is now the afternoon of July 19th.) Originally they had only one C-2 model small transistorized computer: 25,000 operations per second -- April 1969. 8,192 words of memory; 42 bits per word. Magnetic core memory. One year later, they decided to build their own computer, since the C-2 (made in Shanghai) did not have the capacity to fill the needs of the whole city of Shanghai. The workers were mostly mathematicians and knew little about computers, but they elicited the help of the people of Fudan University and of a factory that made door handles. With this 3-way cooperative team, they built a new computer by December 26, 1971 (the birthday of Chairman Mao). This is called the 709 (September 7). 10^5 operations per second; 32,000 word memory; 48 bit words. Uses integrated circuits. This computer is still operational here. During the past 4 years, this institution has done jobs for 300 organizations; done 1000 different programs -- optical design, machine design, electronic circuits, etc. etc. This organization has 56 people in it -- we couldn't design a computer and make it run on Algol, and do the service functions with such a small number of people. Perhaps the University and the factory supplied the major fraction of the people involved. The door handle factory's housewife workers have now given up making door handles and are now turning out four 709 model computers per year. The computers from Peking are much better, according to our hosts -- the computers at the Academy of Sciences. But this service bureau had no contact with Peking while they designed their computer -- it is all their own design.

We saw the C-2, which had 2 magnetic drum memories that looked very much like the memory of an IBM 650, of 1956 vintage. The 709 also had improved drum memories -- 4 of them -- and its input was by punched tape, rather than by cards. The magnetic core planes they showed us looked quite modern to me, with cores less than 20 mils in outside diameter. It took a long time for IBM to make such small diameter cores -- each core is strung with 3 wires threading its central hole; 2 wires in orthogonal directions, and one at 45 degrees. I was impressed by the state of their core memory technology as compared with the relatively primitive state of the rest of the computer technology we saw.

We have now driven to the former door handle factory that makes four 709 model computers per year. The factory "manager" is telling us some of the same things we heard at the service center. This factory was set up during the "Great Leap Forward" in 1958, and most of the workers are housewives. "In order to satisfy the needs of our socialist construction, the higher authorities decided that our factory should make computers, rather than door handles. Our workers didn't even know that computers existed, but with the help of the Computer Institute and the Fudan University, together with Chairman Mao's thoughts, our workers learned to make computers. We can now make computers in our own factory, but we know that our work isn't good enough. So we ask for your suggestions to make our computers better -- we know that you are experts on computers". We are sitting in what appears to have been the elegant dining room of a private home, before liberation. The workers in this factory are not what we would call housevies, but rather "ex-housewives" -- they work a full day -- six

days a week.

The 48 hour week is standard in the cities through China.

We watched girls (and one man) testing the magnetic properties of cores, to reject ones that don't fit the specifications. The cores aren't as small as I thought; they're 0.8 mm diameter, with a 0.5 mm diameter hole. (That is about 30 mils O.D. rather than the "less than 20 mils" I guessed when I saw a completed plane.) No one (with one exception) wore spectacles, and we all marvelled that people could spend a whole day doing such fine work with their naked eyes.

We then watched girls wiring the main frames of the computer, soldering integrated circuits on to printed circuit boards, and then we watched with great fascination the girls as they strung the cross wires through the holes in the cores that had been quite easily strung in the "first direction" -- that operation is a simple "bead stringing operation." Each girl completes a core plane, that contains 40,960 cores. They do all the soldering and string three wires through each hole -- a total of about 120,000 stringing operations. It takes about two weeks for one girl to complete one memory plane. 96 hours -- call it 100 hours = 360,000 seconds, so including all the extra work involved in making the core plane, the average time per stringing operation is 3 seconds. When a girl is stringing, she appears to take less than one second per threading operation. Some member of our group privately asked me if this operation was done in the U.S. and I said, "No -- it's now done in Singapore by Chinese girls".

We then went downstairs (via the "servants' staircase" in this old mansion) to the former kitchen, where they were testing the assembled core planes, to see if each core had been properly threaded by all three wires, and each worked properly when "set" in each direction, and interrogated by its proper address being fed to the core plane electrodes. We then went into the next room, where one of the 709's was close to final assembly. They showed us their "line printer" which was made in some other factory, and showed how it made printouts of large Chinese characters. I got one print-out that says in characters I recognize, "Long live Chairman Mao", and another that says in characters I don't know, "Welcome". While we were watching our print-outs being made -- they correspond to the Christmas "pictures" that are made each year on our computers -- the Chinese did something for our amusement that the Livermore Lab used to do when their computer center was visited by the University of California Regents. They programmed the old Univac to play "Hail to California", by specifying the number of pulses per second (frequency of the sound) as a function of time. Instead of "Hail to California", our Chinese hosts had programmed their 709 computer to play, "The East is Red", which is in effect their national anthem.

After we returned to the tea room, our hosts asked if any of us had any suggestions to improve their operations. I said I had two. The first was that for a production-line test operation on magnetic cores, I thought the oscilloscopes they used were far too expensive. These oscilloscopes were very versatile instruments, with perhaps twenty-five control knobs, plug-in amplifiers, and all the "bells and whistles" one wants on a research oscilloscope, but shouldn't have on a production line read-out

device that needs only to say "go" or "nogo". I said that in our country, if a factory found it had such elegant equipment for such a simple task, it would find universities or research labs that wanted the eight oscilloscopes, and the oscilloscopes would be sold for half-price. The laboratories would get a "good deal", by being able to get a high quality instrument at low cost, and the factory could take the money it received for the sale, use a small fraction of it to build simple test equipment, and use the rest to buy other equipment that would increase the efficiency of the factory. This was translated into Chinese, and into the Chinese way of doing "business", and everyone agreed that it was a good suggestion.

My second suggestion involved the testing of individual cores -- using the oscilloscopes I've just mentioned. Each worker pushed a probe through the central hole of each core -- unit by unit, and then looked up at the oscilloscope screen to see what the pattern looked like. Each time they looked up from the small cores to the screen, their eyes had to pivot upward by about 60 degrees, from nearly straight down, to about horizontal. I suggested that if they reflected the image of the cathode ray oscilloscope in the mirror-like surface on which they manipulated the tiny cores, they could eliminate the very tiring and time consuming act of shifting the eyes up and down through a large angle more than 20,000 times each day. And if they used a lens in the projection system, the workers wouldn't even have to change the focus of their eyes as they shifted their angle of gaze by only a few degrees. Again, they thought this was a good idea, and thanked me for it. If I had been in an American factory, I would of course have suggested that they design and build an automatic testing apparatus to eliminate the wasteful use of human energy to do a dull and uninteresting job of testing core magnetic characteristics. But that would have sounded unfriendly, so I stopped with my second suggestion.

They then asked me what computers were used for in my work. At first I said it would take too long to explain -- I said I had given a two-hour lecture on that subject in Peking last week. But they really wanted to know, so at [redacted] suggestion I gave about a fifteen-minute talk on the subject. Some of the people seemed to understand quite a bit of what I said, and I'm glad that [redacted] encouraged me to undertake the assignment.

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We've just finished dinner in the hotel restaurant (the hotel is the Ch'an Ch'iang -- a first class hotel in any country), where we met for the first time since we saw them on the way into Canton, the delegation from the California Teachers' Association. They had spent several days in Inner Mongolia, where they were the first Americans in 25 years, and almost the first foreigners in the same period. I'll have to go to one of their lectures if I see it advertised in Berkeley after I get home. They were impressed that we had been to Manchuria, just as we were impressed by their unusual travels.

Friday, July 20, 1973

The sun is out in a cloudless day, so it should be a real scorcher on our visit to the commune this morning. We've been fortunate that the clouds in the typhoon system have so far shielded us from the furnace-like

heat we experienced in Hangchow (which is nearby) on our plane trip from Canton to Peking. When we arrived a few days ago at Shanghai Airport, it was tolerable when the sun was behind the clouds, but suddenly turned into a furnace when the sun shone directly on us. So now, sitting in our air-conditioned room, which we really haven't needed in Shanghai, I can imagine what it will be like when we go outside.

I'm writing this toward the end of our visit to a very interesting commune to the northwest of Shanghai. It is obviously a model commune, to show visitors what Chairman Mao wants all communes to look like in twenty to thirty years. (The directions to the rest rooms were given in both Chinese and English. One can often go for more than a day without seeing a single word of English, so the signs indicate that the Chinese show this commune to many foreigners, and even to foreigners who haven't been here long enough to have learned the characters for men and women.)

[redacted] took notes in the usual hour-long session with the vice-chairman of the revolution party, while I got [redacted] permission to go around the area in a car, with interpreter, to fill out a few gaps in my film coverage of China. I wanted more pictures of people working in the fields, and I particularly wanted a picture of a peasant plowing behind a water buffalo -- a very common sight in China. And I also wanted more pictures of farmers working in the fields -- 720,000,000 people work on farms in China, compared to only 10,000,000 in the U.S. The other 80,000,000 in China, and 190,000,000 in the U.S. live in urban areas. (90 °/o - 10 °/o in China; 5 °/o - 95 °/o in U.S.). b6 b7C

[redacted] let me have a driver and one of the young girl interpreters who has been learning English for only a year and a half. We quickly found an interesting group of people working in a field, and transplanting rice in a paddy. Then I said I wanted to photograph a water buffalo pulling a plow. It took a long time to establish that what I called a water buffalo, the girl called a cow. (There was such a cow under a nearby tree, but it wasn't doing anything interesting -- but at least it established what the correct word was.) I have forgotten to mention that in addition to the driver and the "interpreter", there were two other men sitting in the back of the car with me -- neither of them knew any English. Well it soon became apparent that my desire couldn't be fulfilled because there weren't any working cows on the commune. (At first there weren't any cows on the commune, but that statement was finally corrected to take account of the cow that was in full view at the time.) My interpreter said that since there weren't any cows on the commune, we would go back to the headquarters building. I said very firmly, [redacted] told me I could photograph the cow I saw on the way from Shanghai to the commune. Let us drive back toward Shanghai until we see that cow". There was a long discussion, with many glances at watches to indicate this would be impossible in the time available. My interpreter than asked me to write my request in her notebook, so she could be sure she understood my (ridiculous) suggestion. I printed out a statement about [redacted] permission and my desire to go back toward Shanghai and see the cow. This message was studied for a long time, with many discussions in Chinese between the four people who understood the language. The final conclusion, given to me by my young friend was that there weren't any cows, and we would go back to where the meeting was being held. I then said firmly that if we went back, [redacted] would tell them to take me to the cow I had seen. That made the point, and I said they should drive b6 b7C

for five minutes toward Shanghai, till we saw the cow. The driver then went like a madman down the road -- faster than any car I've been in since I arrived in China. For one thing, he was no longer in a procession whose speed was determined by the Red Flag, but he was on his own. And I felt that since they had assured me that there weren't any cows to be seen, I'd have a smaller chance to see one if the car were going faster. After seven minutes, I had to admit I was beaten -- I hadn't seen my cow, and they should turn back. Then, in a couple of minutes, I saw the cow that I had missed because of the high speed of the car. The driver stopped, and I got what should be one of the finest shots I've made in China. In the foreground are three men carrying water in buckets slung from poles over their shoulders, one of whom is scooping water from a bucket to irrigate the field. In the background is a magnificent water buffalo pulling a plow that is guided by a peasant in a wide-brimmed straw hat. If it comes out well, it will be the "opening shot" of the movie after shots of crossing the border. (I should add that I also got a picture of a plow being pulled by a tractor -- the only activity of this sort I've seen in China, even though they are making lots of tractors for use on the larger communes!)

We got back to the conference just as it was breaking up, so I joined in touring this very interesting "model commune". At first I viewed these model communes as "Potemkin Villages", but I now think that is the wrong analogy. Potemkin Villages were meant to deceive, whereas I don't believe there is any deception involved in these model communities as I said earlier. I take them to indicate what Chairman Mao believes most communes will be like in perhaps the next twenty or thirty years. Of course, by that time, these particular communes will be even more advanced, having gotten a head start. A large sign on one of the commune buildings proclaimed in Chinese characters, "Agriculture learns from Tach'ai". Tach'ai (pronounced Dahcheye) is the most famous and advanced commune in Shensi Province -- near Sian and Yenan. This indicates that the very advanced commune we saw today looks to Tach'ai as an even more advanced commune that they would like to emulate.

The commune makes many things, besides raising rice, corn, soy beans, etc., pigs, ducks, sheep and rabbits. We saw the factories in which it makes 3.7 horsepower motors to power agricultural machinery, wooden furniture, wooden buckets, baskets, mats, and even monosodium glutamate, of all things. It was scorching hot out in the country, but I felt the discomfort was a small price to pay for such an interesting experience.

After lunch I decided to check on my travel schedule from Canton to Hongkong and then on to Honolulu. All we have heard for the past week is that "The comrades in Canton have taken care of everything, and there is nothing to worry about". But to an experienced traveler, that is not sufficient. I was told in Peking last week that our train from Canton arrived in Hong Kong at 11 AM, so I asked for reservations on TWA leaving Hong Kong at 1 PM. Since the trains in China run exactly on schedule, that seemed to be plenty of time. I didn't ask when the train left Canton, because that was of no concern to me; as always in China, someone would tell me when to be up, and I'd be in frontof the hotel at the appointed hour. But lately, we've heard rumors that the train left Canton at 8 AM (9 AM Hongkong time) and that obviously made it impossible to get to Hong Kong by 11 AM -- the

train ride is three hours, and there is a long stop at the border for passport inspections, etc. So I decided to check matters for myself. [redacted] tried to dissuade me from going to the China Travel Service or the Airline office because "The Comrades in Canton have taken care of everything". I finally had to say that if I couldn't go in one of our official cars, I would take a taxi -- I really had to check on the schedule myself. At this point, she said she'd go with me, and we talked with the airline people and they said my plane would have left before my train arrived in Hong Kong -- it was now clear that I had received the wrong dope in Peking about the train arrival time, which was "no big deal" -- anyone can make such a mistake. But the Comrades in Canton should have noticed that I couldn't make the plane they had booked for me. b6 b7C

So now, we are going to leave Shanghai early tomorrow, on a small plane -- the jets fly only 2 days each week. We'll now have an overnight stay in Hong Kong, and won't go to Soochow tomorrow as had been planned. But neither [redacted] nor I was really turned on by the idea of going to Soochow, even though we were looking forward to the trip, as we have been to each new thing in China. Neither of us is at all upset about the change in plans, which merely shortens our wonderful stay in China from 23 days to 22 days. That's still one more day than the "three weeks" for which we were invited. b6 b7C

Saturday, July 21, 1973

We're on the way home, in an Antanov turboprop plane (F-27) of the kind we took from Peking to Shenyang and Darien. It has taken just a half hour to fly to Hangchow. It will take another five hours to get to Canton (Kwahngjoe). It was only two hours from Canton to Hangchow on the big jet, three weeks ago. We will stop at Changsha in a couple of hours; it was on our original travel schedule, and some of our party will be there for three days on their way down to Canton.

I told [redacted] this morning that I would like to meet"the comrades" in Canton who had been so helpful with our travel arrangement. (She said they would meet us at the Canton airport.) I will tell them that the original schedule would have worked out just fine, but my wife and I decided we wanted a night's rest in Hong Kong before we started our long tiring trip to our own country. I will conclude by apologizing to them for bothering them with something that was only for the personal comfort of me and my wife. We know that's a lie, and they and [redacted] will know it's a lie, but it will "save face" all around, and so we must go along with the gag. I have of course heard for years of the importance of "face" to the Chinese, but this is my first experience with a real example of the problem. I am well tuned to the problem with Egyptians, and react automatically to do the correct thing. But the Chinese seem to be so reasonable that I made the mistake yesterday of explaining to [redacted] that someone had simply given me a wrong time in Peking, and it didn't bother me a bit- we could adjust our schedule to compensate for it.She then launched into a lengthy defense of the comrades in Canton, who had carefully considered our original schedule and found that we would have time to make our plane in Hong Kong -- even though [redacted] and I had earlier agreed that the train arrived after the plane had left. Had I been in Egypt, I would instantly have agreed with her, and the discussion would have ended satisfactorily to all b6 b7C

concerned. But I felt it would help her to understand the problems of international travel if we looked at it more closely -- she is having her first flying experiences on this trip, having just been certified as an interpreter. That was a mistake, but I have made it up to her in a number of ways, for example by sitting next to her at our banquet last night in honor of herself and the three Chinese men who've accompanied us all during our stay in China. So I will now bring the whole affair to a happy conclusion this afternoon in Canton, when I tell my little fable to the comrades, in front of [redacted] Except for the negative reaction to my suggestion concerning quick delivery of the Physical Review, this has been my only "goof" in three weeks of quite intimate relations with both Chinese and Americans. I mention it largely to let prospective visitors to China know that despite enormous changes in the Chinese way of life since liberation, "face" is as important as it used to be. b6 b7C

We stopped for over an hour in Changsha, where the passengers were fed lunch, in two shifts, at the airport restaurant. We're now on the final leg of our long air journey in Chinese skies; the flight to Canton is scheduled to take an hour and twenty minutes.

The banquet last night in Shanghai was a great success; it was given by our delegation for our four Chinese traveling companions for the past three weeks. The two senior men in this group don't speak English, so we haven't gotten to know them very well. [redacted] is number one, and [redacted] is number two, and they can solve any problem that comes up. The other two members are our frequently mentioned interpreters, [redacted] and [redacted] We had as an additional guest, [redacted] the son of our friend [redacted] whom I've mentioned earlier. All of our delegation was lined up in protocol order, and the four guests came in in their protocol order, and shook hands with everyone in the line -- just like what happens at the many banquets we've attended. Then we all went in and sat at two large round tables, with no attention to protocol order, and with no place cards -- the American way. Most of the Americans had expressed sadistic pleasure at the thought that they could finally load up the plates of their Chinese guests with "serving chopsticks", and that they wouldn't be able to do that to us -- we were the hosts this time. I celebrated my "return from childhood" by eating not a single one of the hors d'oeuvres -- I never eat them in the U.S., and I've suffered in silence through more banquets than I can count, eating these things which other people think of as great delicacies, but which I really don't like. The meal was delicious, as we knew it would be, from having eaten a banquet cooked a few nights earlier by the same chef. We had asked for some "hot" dishes, which means spicy rather than thermally warm. The chef replied with prawns cooked in the Szechwan style, which were appreciated. We had a soup that had been specially created for Mr. Nixon's visit, and praised by him. We agreed that it was a great soup. All in all, it was one of the finest meals we've had in China, and everyone had a great time. Almost everyone made a toast, which we drank in Chinese red wine, rather than in the semi-lethal Mao Tai. If we had gone "Gomb Bay"in Mao Tai as often as we actually did in the red wine, no one would have been able to get out of the room -- even on hands and knees. The toast which everyone enjoyed most was given by [redacted] she gave it in English, and [redacted] her boss dutifully translated it into Chinese for her. Since she is usually low person on the totem pole, we were pleased to hear her in her new role, making a toast to the women members of the b6 b7C

delegation, who had worked as hard as the men. [redacted] made a very gracious toast to [redacted] and me, on the eve of our departure, thanking us for our contributions to the success of the visit. Even [redacted] made a toast, the first I've ever heard her give, and it was very well received. b6 b7C

As a special treat for [redacted] had ordered baked Alaska for dessert. The chef hadn't heard of it, but after a few words from [redacted] earlier in the day, he produced an elegant product. He was invited to meet with us, and he offered a toast to "Friendship between the peoples of our two countries" -- the most common toast we've been hearing for the past three weeks. b6 b7C

We presented [redacted] and [redacted] with a small album of Polaroid pictures of each couple, with signatures of everyone on the page with his picture. [redacted] was given one of the many copies of Nagel's encyclopedic guide to China which the delegation had brought into the country, and [redacted] was given a book about Peking, the city in which she lives. b6 b7C

After the banquet, we all went to the first floor of the hotel, where our hosts had arranged a screen and two moving picture projectors. They had hoped that we could see one of the famous revolutionary ballets while we were in the country, but the companies were on vacation. So we saw a filmed version of "The Whitehaired girl", one of the best known examples of this type of entertainment. We all enjoyed it thoroughly, and recognized some of the scenes that are frequently seen in colored wall posters throughout the country. We also saw an interesting movie taken in Tibet, on rock avalanches, a phenomenon I had never seen filmed before. This movie also contained the only shots of Tibet I've seen that were taken after the Chinese annexed Tibet shortly after liberation.

After a short sleep, we had breakfast in our room -- our first room-service in China, a round of heartfelt goodbyes with the people setting out for Soochow (pronounced Soojoe), also at the 6:50 departure time, and we were on our way to the airport with [redacted] and [redacted] (from Minnesota) certainly didn't have to get up early to see us off for Canton, but the fact that he did tells again how much our visit has meant to the Chinese physicists. They have been as anxious as we have been over the years to get scientific exchanges under way, and are as happy as we are, now that "scientific relations have been normalized". I gave [redacted] the last copy I had of the photograph of the Crab Nebula, and he seemed pleased to have it "to frame and put on my wall", as he said. b6 b7C

After arrival at Canton airport, where we were met by the three comrades who had taken care of my travel requests, we sat in the lobby and talked and drank tea. I apologized to each of them for causing so much difficulty simply for our own comfort, and they all smiled and said it was no trouble at all. We then drove to the Tung Fang Hotel, where we stayed on our first two nights in China. After a visit in our room, they left so that we could have a nap before the dinner they gave for us this evening. I asked that it be made simple, so there were just the six of us in a private dining room. My plate was loaded several times by my host, but the food was so good that I forgot to be upset. I've also remembered that when we have guests to dinner, I carve the roast and serve the vegetables to each person in turn. So my earlier analysis of what I don't

like about the Chinese system isn't valid -- it's just that I have to eat a lot of the kind of hors d'oeuvres that I never touch at home. I obviously like almost everything else about Chinese meals -- how else to explain the fact that I'll have to go on a diet when I get home, to get rid of the roll of fat that has developed just under my belt in the past three weeks. But I'll go on the diet after I've had a few of the enormous steaks I've been dreaming about lately.

The dinner this evening was a very relaxed and friendly affair, and a fine conclusion to our very happy and thoroughly wonderful three weeks in China with so many friends, both old and new.

I'll now change the subject abruptly to one that all travelers to strange lands will immediately ask: "Did you have any intestinal problems?" Until this morning, the answer would have been, "absolutely none". But I caught "Delhi belly" this morning. A few lomotil tablets since then have produced a miraculous cure, and I've had none of the discomfort associated with "Montezuma's revenge". I've been very careful not to ingest any unboiled water, boiled water is always available in hotel rooms. For example, when I shave, I use a bladerazor on my cheeks, chin and neck, but not on my upper lip -- hot tap water can drip from one's upper lip onto his lips. So I shave my mustache dry, with an electric razor. My guess is that the wet towels we were given at the commune yesterday were dipped in unboiled water. I thought I protected myself by not washing my face with the towel -- I normally do wash my face in the hotels because their wet towels are moistened with boiled water. So I associate my short-lived and late-arriving difficulty with germs present in the commune environment.. We were perspiring profusely all the while, and under those conditions, it is hard to stay aseptic. This is particularly true in a country where the major fertilizer is still "night soil" -- human excrement. (At half a pound per day, that amounts to 70 million tons per year.)

I've been remarkably healthy and vigorous all during my stay in China, and I attribute this to the fact that I "trained" for the event for a solid month before leaving Berkeley. I jogged for over a mile every morning, to build up my endurance, and I think that that effort paid off well. I was the oldest member of the party, at 62, and almost everyone commented at one time or another on how well I was holding out under a quite demanding schedule. Most of the girls had colds or hacking coughs, and several had to see doctors, but I hardly did as much as clear my throat for the full three weeks. Glenn Seaborg had warned me about the dust in the air, and that warning made me caution the driver of car No. 2 in each city to keep enough distance from car No. 1 to allow the heavy dust to settle before we got to it. Before I adopted that technique, our driver was almost bumper to bumper with the car ahead, and I'm sure I couldn't have taken much of that.

Sunday, July 22, 1973

This is our last day in China, and also my recently widowed father's 89th birthday. Our children are in Minnesota visiting their [redacted] and her husband [redacted] who were married this spring. [redacted] mother and father are spending a couple of days driving around

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Minnesota, while [redacted] and [redacted] visit [redacted] when the children will take their first train ride -- from Minneapolis to Seattle. From Seattle, they'll go by plane to San Francisco, and arrive home the day before we get there. b6 b7C

Now I'll go back to our train trip out of China. We had breakfast in the hotel restaurant we came to know so well three weeks ago when every moment was new and exciting. Compared to some of the new arrivals in the dining room, we feel like "old China hands". We drove to the railroad station with the same group of comrades we had dinner with last night. Apparently my apology yesterday took care of the "glitch", since they have been "killing us with kindness". (We arrived at the Hong Kong train station 40 minutes after our TWA flight 744 had left that day, so my apprehensions had some basis in fact -- in spite of the fact that "the comrades had considered it carefully and found that I would have no trouble making the connection". But for people who have never ridden on an airplane, they did remarkably well -- they did make the reservation on TWA, and also reserved us a hotel room in Honolulu.)

After picture taking in front of the station, and fond farewells from the very lovely [redacted] we were pleasantly surprised to have [redacted] [redacted] (pronounced [redacted]) greet us. He was going to a conference in Japan, but his wife is staying in Shanghai. After the train started, he came into our car and sat and talked with [redacted] and me almost to the border. It was a wonderful opportunity to exchange observations on the new China, and to thank [redacted] for his part in securing our invitation. Only as he was about to leave did I ask about his interview with Chairman Mao, Chao En Lai and Chao Pei-Wan, last week. I said, "If I were a reporter from the AP, would you be able to tell me anything about your interview?" He said the main thing discussed was science, in which the Chairman is very interested. He said that by granting the interview, Chairman Mao was telling the people of China that he thought science was important in the development of China. Since I didn't want to appear to be "prying", and since [redacted] had already started to leave, this was an appropriate time to end the "interview". [redacted] made it quite clear that he was particularly happy that I had been able to visit his native land, and I told him how impressed I had been with the fantastic development of the country in the past 24 years. I also commented on the exceedingly friendly welcome we had been accorded everywhere we went, and he volunteered that the Chinese have always been very friendly and non-aggressive in their personal characteristics. I can't think of any circumstances that would have made my last hour in China more rewarding than to spend it in a very personal conversation with my old and good friend [redacted] b6 b7C

~~SECRET~~

Classified per OGA letter 01/26/2010

DIRECTOR, FBI (116-7905) 11/23/73

SAC, SAN FRANCISCO (105-16261)(C)

LUIS WALTER ALVAREZ, aka
Doctor Alvarez
IS - CH
OO: San Francisco

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-09-2009

Re San Francisco letter to Bureau, 10/30/73.

Enclosed for the information of Bureau are two (2) copies of "Diary of a Trip to China" (June 30 - July 22, 1973) recorded by ALVAREZ during his trip to China.

(S) [redacted]

In view of the above, San Francisco contemplating no further investigation at this time, but will set tickler to recontact in one year to determine if he has had further contact with China. In the event this kind of information is developed re ALVAREZ in the meantime, it will be furnished the Bureau in form suitable for dissemination. b1

Also enclosed for the Bureau are five (5) copies of LHM dated and captioned as above.

(S) One (1) copy of LHM [redacted]

The employee who viewed the movie and who contacted ALVAREZ is SA [redacted] b1 b6 b7C

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED EXCEPT
WHERE SHOWN OTHERWISE

[redacted] b6 b7C

Also set LT for 11/1/74 to review

2 - Bureau (Encs. 7)(RM)
1 - San Francisco
MAH/vsk
(3)

~~SECRET~~

Searched
Serialized
Indexed
Filed

105-16261-21

11/26 Encs rec'd

FD-159 (Rev. 5-23-66)

~~SECRET~~

RECORD OF INFORMATION FURNISHED OTHER AGENCIES

Orally _____ date By Telephone _____ date Written Communication 11/23/73 date

Information concerning:

LUIS WALTER ALVAREZ, aka
Doctor Alvarez
IS - CH

Information furnished from File, Serial, and Page Number:

105-16261

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DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-09-2009

Information furnished was obtained:

☒ during course of Bureau investigation

☐ from informants

(S) ☐ from complainants or other sources

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WHERE SHOWN OTHERWISE

Information furnished to:

[redacted] b1

Number of items disseminated: 1

Remarks:

SF LHM dated and captioned as above.

Classified Per OGA letter 01/26/2010

~~SECRET~~

1 - 105-16261
1 - 80-461

[redacted]
Special Agent

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SERIALIZED FILED
FBI — SAN FRANCISCO

b6
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105-16261-72

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

~~SECRET~~

UNITED STATES GOVERNMENT

Memorandum

TO : SAC, San Francisco (105-16261) DATE: 1/22/74

FROM : Director, FBI (100-344677)

SUBJECT: LUIS WALTER ALVAREZ, aka
IS - CH

EXEMPTED FROM AUTOMATIC
DECLASSIFICATION
AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-09-2009

(S) Reurlet 11/23/73.

[redacted] b1

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Classified Per OGA letter 01/26/2010

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SERIALIZED FILED
JAN 23 10 02 AM '74
FBI-SAN FRANCISCO
[redacted]

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~~SECRET~~

105-16261-23

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

5010-108

~~SECRET~~

DIRECTOR, FBI (100-344677) 8/19/74

SAC, SAN FRANCISCO (105-16261)(C)

LUIS WALTER ALVAREZ, aka
IS - CH

Re Bureau letter to San Francisco, dated 1/22/74.

(S) [redacted] b1

(S) [redacted] b1

(S) [redacted] b1

In view of the above, this case is being closed, but will be reopened in the event pertinent information is developed by this office (S) [redacted] b1 Pertinent information will then be furnished to Bureau.

2 - Bureau (RM)
1 - San Francisco
MAH/cmv
(3)

[redacted] b6 b7C

Indexed
Filed

~~SECRET~~

105-16261-24

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DIRECTOR, FBI (100-344677) 3/11/75

SAC, SAN FRANCISCO (105-16261)(C)

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AUTHORITY DERIVED FROM:
FBI AUTOMATIC DECLASSIFICATION GUIDE
EXEMPTION CODE 25X(1)
DATE 04-09-2009

LUIS WALTER ALVAREZ, aka
IS - CH

Re San Francisco letter to Bureau, dated 8/19/74, and Bureau letter to San Francisco, dated 1/22/74, both captioned as above.

Criminal checks conducted during the months of January and February, 1975 proved negative for the Subject. A check of San Francisco Office indices also failed to disclose any information not previously reported to Bureau.

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On 3/10/75, ALVAREZ furnished the following information: He has not returned to the PRC since that first trip, nor does he intend to return, inasmuch as the first trip was merely to satisfy his tourist's curiosity. He has not been contacted by anyone regarding that trip or a return trip. He stated that he would immediately contact this office in the event anyone does contact him in this regard. In view of the above, San Francisco is closing this case. If reopened, the results will be furnished to the Bureau in a form suitable for dissemination.

Classified Per OGA letter 01/26/2010

~~SECRET~~

Searched
Serialized
Indexed
Filed

2 - Bureau (RM)
1 - San Francisco
MAH/crv
(3)

FILE STRIPPED

105-16261-25